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While the purpose of this project was curriculum development, long range benefits are contingent upon a radical reorganization and upgrading of public school systems throughout Appalachia. Subjects in the pilot assessment consisted of 80 children (3 1/2 to 6 1/2 years old) and their mothers from each of Monongalia and Upshur Counties, West Virginia. Mothers were given a demographic child-rearing practices interview-questionnaire. Children were divided into two groups and were given different batteries of tests. Their performance revealed cultural diversity rather than uniform cognitive-intellectual deficits. Clearest deficits centered on verbal tasks or problem settings which demanded symbolic representation, which appeared to increase in severity in disadvantaged children. Spatial reasoning, memory functions, and conservation or logical operations skills did not appear impaired. A section on behavioral objectives for a preschool curriculum is outlined in the document, and a section is devoted to a survey of representative preschool intervention research. An extensive bibliography is appended. (DO)

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Final Report

Frank H. Hooper

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Division of Family Resources
College of Human Resources and Education
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PS 001546

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TABLE OF CONTENTS

I. Introduction 1

II. A Survey of Representative Preschool Intervention Research 4

III. The Intellectual Abilities of Rural Appalachian Children: The Pilot Assessment 63

IV. Behavioral Objectives 97

V. Appendices:
  1. Parent Interview-Questionnaire Q-1
  2. Interview-Questionnaire Summary Tables Q-12
  3. Bibliographies:
    A. Intervention Research with Disadvantaged Children A-1
    B. Proposals and Programs for Preschool Enrichment B-1
    C. General Issues in Training Disadvantaged Children C-1
    D. Bibliographic Sources and Government Directives D-1
    E. Piagetian Training and Enrichment Studies Bibliography E-1
    F. Developmental Studies of Learning Processes
      1. Verbal Learning F.1-1
      2. Concept Formation F.2-1
      3. Probability Learning F.3-1
      4. Problem Solving and Problem Solving Strategies F.4-1
      5. Incidental Learning F.5-1
      6. Learning Set F.6-1
      7. Transposition and Related Phenomena F.7-1
      8. Incentive, Delay of Reward, and Reinforcement F.8-1
      9. Reversal-Shift and Discrimination Reversal F.9-1
      10. Stimulus and Response Factors F.10-1

I. Introduction

The most important unifying theme of the present curriculum development endeavor is the integral relationship of the major components. Ideally, the initial research survey should convey valuable guidelines and comparative information to aid in the design of the pilot assessment program. The assessment results, in turn, should be a primary information source for the derivation of meaningful operational curriculum objectives. The behavioral objectives play a natural role in structuring the actual demonstration teaching sequences and represent foci for each of the major curriculum content-units. Short-term feedback information and long-range evaluation procedures designed to assess the general effectiveness of the intervention program should be closely aligned with the behavioral objectives specifications and the original pilot assessment data. The pilot assessment results, for example, are valuable reference points for the selection of final criterial indices or measurement formats. In this regard, it should be possible to distinguish the curriculum-specific assessment tasks which are directly tied to the behavioral objectives from the general evaluation program which will utilize standardized tests.

The commonly expressed assumption that the typical Appalachian preschool child is significantly deprived vis a vis his middle class peers is supported by the present assessment data. Although the present subject sample demonstrates a "qualified" picture of intellectual deficits, there is absolutely no question that children in the rural Appalachian region require extensive educational improvement. Insofar as the preschool child is concerned the primary question remains; Can conventional kindergarten programs accomplish this crucial educational aim?

It is probably safe to conclude that the conventional classroom based kindergarten or nursery setting is patently not the ideal means of correcting the general educational deficits of the Appalachian Region. New imaginative approaches are obviously essential and these may include educational television broadcasting, mobile unit intervention-enrichment centers, and active parent training and participation programs. Combination approaches involving a number of related task components and curriculum emphases are probably the best alternatives for those projects demanding immediate implementation. Unfortunately, the bulk of the existant research data has concerned small groups of children, undergoing fairly restricted specialized training in quasi-laboratory classroom settings. This is one reflection of the past failure of academic and developmental psychology to contribute viable information for the "action programs" of current educational practice.

The present report represents only the initial phase of an admittedly ambitious preschool curriculum development and demonstration project. As the current literature and present assessment results indicate it is absolutely mandatory that the preschool child be reached as early as possible, e.g., three to four years of age. Whether a single general curriculum can effectively involve and interest a group of children aged three, four, and five years remains a moot question. The large number of significant age progressions in the present assessment results reveals this issue to be a major potential problem area. The final evaluation design and methodology, in particular, presents a series of critical considerations. To a large extent, the potential success of the overall demonstration program depends directly upon the virtues and faults of the evaluation design.

Beyond these considerations, the long range benefits of our efforts are contingent upon a radical reorganization and upgrading of the public elementary and secondary school systems throughout Appalachia. Heretofore the typical Appalachian region school district has been a focal point of conservative reaction and inherent resistance to progressive change. Public educational institutions appear to be unique in rewarding inefficient procedures and outmoded product lines. Perhaps the most significant outcome of the present curriculum development endeavor concerns its role as a potential stimulus to educational practices in public school systems throughout the Appalachian area.

II. A Survey of Representative Preschool Intervention Research

This survey covers a series of studies whose major emphasis is work with socio-economically disadvantaged preschool children from rural and urban areas. The majority of these studies were carried out within the last five years and represent the recent surge of interest in the disadvantaged child and the problems he encounters in the American public school system. An attempt has been made to avoid the inclusion of articles or studies which have appeared to previous summaries of this type, e.g., Bloom, Davis, and Hess, 1965. This survey is not exhaustive and among the notable ommissions are the Durham, North Carolina Educational Improvement Program, The McCormick County South Carolina Pre-First Grade Instruction Program, The University of Georgia Educational Stimulation Project, and numerous Headstart Program Reports the majority of which were not available in time for inclusion.

The present studies have been undertaken as an attempt to provide disadvantagedchildren with a preschool program which will help them enter public school on a more equal basis, intellectually and socially, with their nondisadvantaged peers. The conception that a child's intellectual potential or capacity for learning is genetically fixed has given way to belief that intellectual development is a joint function of the child's native endowments and his exposure to a wide range of stimulation and experience within the environmental milieu. All the present research shares the basic assumption that unless the child is exposed to a wide range of stimuli which are fairly well matched to patterns of behavior he already has, his intellectual development will be markedly restricted (Almy, 1964; Ausubel, 1966; and Hunt, 1964). This follows naturally from the American ideal that "all men are created equal"; thus the major causal factors structuring academic failure and intellectual deficit (assuming the absence of neurophysiological defects) are to be found in the quantity and quality of the environmental input.

The assessment devices most frequently used throughout the present survey include the Stanford-Binet Intelligence Test (51 percent), The Illinois Test of Psycholinguistic Abilities (29 percent), and the Peabody Picture Vocabulary Test (28 percent). Several other tests measuring social adjustment, scholastic ability, problem solving skills, and perceptual-motor functioning were utilized, as well as standard achievement batteries, readiness tests, teacher rating scales, and other observations by professional workers.

Several different types of intervention were used by the various programs. Many have recognized, for example, the need to actively involve parents in the training of their children, and have made efforts to obtain the cooperation of the parents and neighborhood workers, e.g., Kamii and Radin, 1967; Baltimore, Maryland Public Schools Admissions Project, 1963-64; Gray and Klaus, 1965; and Feldman, 1964. A few studies relied upon the "traditional" nursery program as a sufficiently enriched environment for the disadvantaged child (Hayweiser, Massari, and Meyer, 1967; and Wolman, 1963) while others used children in the traditional nursery setting as a comparative control group (Alpern, 1966; Blank, 1967; Smilansky, 1965). Certain special techniques were employed, as in the Brazziel and Terrell, 1962; study where a one-half hour educational television program was included as an integral part of the home efforts with the child, or the Bender, 1965; study which encouraged free time use of a START teaching machine by an experimental group of kindergarten children.

PS 001546

Insofar as theoretical positions are concerned, each of these projects represents a curriculum model in operation; thus the number of alternative approaches to preschool enrichment appears to cover a wide range of didactic techniques and associated educational philosophies. Certain programs, notably those derived from the initial assumption that self-directed learning or "discovery" result in superior behavioral acquisitions, stress the free exploratory responses of the child in a relatively nonstructured, open-ended curriculum setting. The emphasis in these programs is upon the organism-environmental interaction within a markedly enriched stimulus milieu. In contrast, a number of preschool curriculum approaches strongly influenced by traditional American learning theory have presented enrichment programs with a general achievement orientation and a reinforcement based training format similar to conventional classroom instruction in the later elementary and secondary school years. In general, these latter approaches have offered the preschool child a highly structured curriculum or learning sequence. The Piagetian theory of cognitive development was the general framework for a number of the studies included in the present survey, e.g., the Gale Preschool Program, 1966; Sigel and Olmstead, 1962; and Springle, VandeRiet, & VandeRiet, 1966. A number of recent attempts have been made to extrapolate aspects of Piaget's theory of cognitive development to the educational scene. These have included general interpretations by Aebli, 1951; Beilin, 1966; Flavell, 1963; Hooper, 1968; Peel, 1960; Sigel, In press; Stendler, 1965; special treatments of mathematics instruction by Dienes, 1960, 1963, 1965; and Lovell, 1961, 1966; and applications to special education problems and early childhood curriculum development, Kamii and Radin, 1967; Sigel, 1966; Sonquist and Kamii, 1967; and Wolinsky, 1965. In addition, a number of curriculum development conferences which have focused on the value of Piagetian contributions have been held. These are reported in Bruner, 1960; Morrissett, 1966; Ripple and Rockcastle, 1964; and Sigel, 1966. There appears to be abundant evidence, at least on a theoretical level, that the Piagetian system can effectively bear upon educational issues and problems.

Piaget's general system places maximum emphasis upon the active interchange between the growing organism and his environment. It is only via these active interactions that the child gradually constructs a stable body of information concerning the physical world, the individual self, and the action sequences themselves. Three general developmental periods are postulated by Piaget. The sensory-motor period covers the early preverbal years. During this period the infant operates via reflexes and perceptual-motor coordinations to slowly develop concepts of space, objects, time, and physical causality which are the ontogenetic precursors of later logical operations concepts.

The second developmental period is divided into two substages: the preoperational or intuitive stage and the concrete operations stage. The former spans the early childhood years of two to seven. Thus, this developmental interval and its associated behavioral manifestations are of primary importance to the preschool nursery and kindergarten school domain. Stendler, 1965, p. 332; summarizes the major aspects of children's thought during this preoperational period:

1. The child is perceptually oriented; he makes judgments in terms of how things look to him. Piaget has shown that perceptual judgment enters into the child's thinking about space, time, number and causality. It is only as the child goes beyond his perceptions to perform displacements upon the data in his mind that conservation appears.

2. The child centers on one variable only, and usually the variable that stands out visually; he lacks the ability to coordinate variables.

3. The child has difficulty in realizing that an object can possess more than one property, and that multiplicative classifications are possible. The operation of combining elements to form a whole and then seeing a part in relation to the whole has not yet developed, and so hierarchical relationships cannot be mastered.

Thought in the stage of concrete operations (7 to 12 years of age) is governed by certain logical structures designated "elementary groupings" by Piaget. These groupings are related to certain functional capacities including multiplicative classification-relationality skills and the ability to perceive and utilize reversible transformations. The child at this time can dissociate and abstract his private role within the organism-environment interaction from the physical characteristics of the interaction. The final stage of cognitive growth, the formal operations period, (11-12 years through adolescence) is characterized by propositional thinking, symbolic abstractions, and the potential for hypothetical-deductive reasoning or second-order operations (Lovell, 1966).

There are a considerable number of Piagetian theoretical principles and generalizations which have obvious relevance to educational problems. Piaget's formulation is a stage-dependent model which specifies an invariant order of achievement for various cognitive acquisitions. This invariant sequence may form the basis of satisfying two interrelated curriculum requirements: what particular task materials or operations should be included in a training program and when these tasks may be introduced for optimal learning. In brief, this entails the accurate assessment of the student population prior to educational intervention. Following accurate stage placement the material to be presented follows directly from the conceptual and empirical task mastery sequence, e.g., assuming that competence has been demonstrated for Stage A functioning, and assuming that Stage C competence is desired, then enrichment materials and procedures should focus on Stage B task requirements. Stage sequences for certain conceptual areas including number, spatial-geometric, and logical operations concepts have already been mapped out.

In addition to the stage invariance strategies Piaget's model specifies a much more general training directive. This stems from the inherent generality of the logical operations structure native to the early and middle-childhood period. The essence of the logical "groupings" is a subsumption of a wide variety of superficially distinct task requirements under a single logical operations rubric. Thus, multiplicative classification skills may be closely related to spatial relationality, equivalence transformations, conservation acquisition, etc., Flavell, 1963; Hooper, 1968. While the actual degree of operational convergence present in children's performances at a given developmental level has yet to be fully specified, (Sigel and Hooper, 1968) classification training has been found to accelerate conservation acquisition, Shantz and Sigel, 1967; and Sigel, Roeper, and Hooper, 1966.

In addition to these considerations the Piagetian research group has a definite conception regarding the learning process itself. Training should consist of an active involvement between the student and his school materials. Concrete actions are preferable to didactic presentation, readings, or lectures and this is especially true of the preschool age interval. Whenever possible the curriculum must be "translated" into action sequences based upon the logical constructs involved.

Piaget's equilibration model of cognitive change demands a careful matching between the student's presently mastered skill repertory and the introduction of new stimulus task material. Task difficulty should be adjusted to produce just the right amount of "cognitive conflict", the resolution of which reinforces and stabilizes the structural changes thus produced. Meaningful nonrote behavioral modification requires a skillful instructor, a challenging curriculum program, and considerable freedom for the student to investigate and master the impinging problem formats. Finally, Piaget lays heavy emphasis upon the value of learning and cognitive alteration within a viable social setting. Peer group relationships are especially meaningful conflict situations. It is mandatory, therefore, for some preschool and early elementary educational advancement to take place within the classroom, nursery, or day care center milieu, Piaget, 1964.

The foregoing discussion has covered theoretical extensions from Piagetian sources. Certain of these implications have already begun to influence current educational practice. A number of preschool enrichment programs based on Piaget's system are being developed and validated. Perhaps the prime example of this work is being undertaken in Ypsilanti, Michigan, Kamii and Radin, 1967; and Sonquist and Kamii, 1967.

These authors take the position that compensatory preschool education "must build a solid foundation for further development by going back to the sensory-motor period, and making certain that intermediate stages are not skipped or only partially achieved", Kamii and Radin, 1967, p. 315. A program has been devised which utilizes various sensory-motoric activities as a basis for initial representation. This is blended into experiences on the figurative and perceptual representational levels culminating with the spoken and written language of the "sign" level within the Piagetian framework.

An additional major aspect of this program concerns the child's understanding and usage of relational concepts. Specific training techniques aimed at preclassification grouping, preseriation ordering, and elementary spatio-temporal relationships are being developed. The overall goal of this program is the creation of an enrichment plan designed to insure mastery of the cognitive prerequisites to later logico-mathematical reasoning. As the authors conclude, "Without a firm foundation, cognitive acquisitions can be only shaky and spotty at best. No matter how strong the student's motivation may be, and how healthy his social relationships may be, academic success is very unlikely without the prerequisite intellectual abilities to absorb classroom instruction. Academic success is crucial to the disadvantaged child, for unless he can perform adequately in the classroom, all efforts to enhance his self-image, increase his desire for further education, and enable him to participate fully in our society are likely to fail in the long run." (Kamii and Radin, 1967, p. 323)

The premiere example of the highly structured approach to preschool enrichment is that developed by Bereiter and Engelmann. The Bereiter-Engelmann approach stems from two basic premises. (1) The culturally disadvantaged preschool child will never derive maximum cognitive-intellectual improvement from the traditional "free play" atmosphere indigenous to the nursery school setting of his upper-middle class counterpart, and (2) the primary route to academic, social, occupational, and general intellectual improvements for the disadvantaged child rests upon language development which is viewed as permeating all of these areas and constitutes the chief distinguishing feature between lower-class, disadvantaged children and their more privileged middle-class peers.

The former assumption dictates a highly structured, tightly planned daily program of training experiences designed to enable the culturally deprived child to overcome his cognitive deficits and eventually to meet the requirements of the conventional elementary classroom. It is not that the lower-class child receives less overall stimulation from his environment (in the urbam slum setting he may, in fact, receive more diffuse stimulation than his upper-middle-class counterpart), but the quality and range of this environment input is not appropriate to optimal cognitive growth. It is the task of the enrichment program to provide this "selective" stimulation in a format structured for maximum utility, e.g., one which makes the best possible use of the child's limited exposure to the curriculum material and the instructor's guidance.

In the Bereiter-Engelmann Program the children are expected to actively work and produce. Successes are openly praised and a general achievement orientation is encouraged.

Thus, "instruction is carried on in a highly disciplined manner . . . the pace is fast, all children are required to respond and to put forth continual effort . . . Guessing and thoughtless responding are discouraged." (Bereiter, 1966, p. 7).

Each of the intensive training sequences are "balanced" by appropriate free play periods but the overall emphasis focuses upon the preschool as a place to work and learn.

Although this approach included consideration for such subject areas as music, mathematics, and reading readiness (Bereiter and Engelmann, 1966), the major preoccupation concerns language and vocabulary development. A patterned language "drill" has been devised, the goal of which is to upgrade the vocabulary level and associated syntactical structure typical of the culturally disadvantaged child. The main aspects of this program are summarized by Bereiter:

1. It attempts to focus on minimum essentials of language competence rather than allowing the content of the language program to be determined adventitiously. The minimum essentials were identified, not on the basis of frequency of use, but on the basis of the logical requirements of a communication system that will permit academic teaching to go on. The objective is a kind of basic English that teacher and child may use in the conduct of elementary education--a basic English, therefore, which does not embody all the concepts a child should master but which provides a medium through which those concepts may be learned.

2. Recognizing that learning the rules of language and logic is a matter of grasping and generalizing analogies, the program is structured so as to dramatize those analogies. Rather than grouping concepts on the basis of their thematic associations (concepts related to the school, to the zoo, etc.) they are grouped together on the basis of the rules governing their manipulation. Thus polar sets of diverse content (big-little, hot-cold, boy-girl) are taught as part of a single sequence, so that the child may eventually come to grasp the major principle governing such sets--the principle that saying that something is not one member of the set is equivalent to saying that it is the other member of the set.

3. Every effort is made to maximize the number of monitored responses that each child makes per class period. This, we feel, is the most critical tactical problem to be solved in teaching language to disadvantaged children--how to cram more "trials" into the limited time available for training. By trial I mean not merely exposure to some verbal stimulum (television can provide that) or some spontaneous verbal response (which merely strengthens whatever habits are in inforce at the time), but a complete unit consisting of the presentation of some instruction, the child's making a discriminative

response, and the teacher's providing corrective feedback or reinforcement. Working with one teacher to five children, we have made substantial use of pattern drill with unison responding on the part of the five children. Teachers can generally detect individual errors in unison responses with this many children, and this provides almost as many legitimate trials per period for five children at a time as could be provided for one child at a time in a tutorial or one-child-at-a-time kind of teaching situation. In a typical twenty-minute teaching session, each child has several hundred actual trials, this permitting fairly rapid progress through the instructional program. (Bereiter, 1966, pp. 3-6).

To a large extent the success of the Bereiter-Engelmann Program rests solidly upon this linguistic substructure. Initial results indicate that children participating in the academically oriented experimental preschool do indeed show impressive improvements on the Illinois Test of Psycholinguistic Abilities. There is some question, however, as to whether language development per se can exhaustively subsume all the varied features of cognitive functioning said to underlie the ontogenesis of intellectual development. Certain investigators seriously question the efficacy and generalization of intense verbal training at the preschool levels, e.g., Piaget, 1964; Inhelder, Bovet, Sinclair, and Smock, 1966; Furth, 1966, 1967; Beilin, 1966; and Sigel and Hooper, 1968. In this regard it is interesting that a number of current research topics of the Bereiter-Engelmann group include a concern for certain cognitive tasks usually associated with the Piagetian researchers, e.g., conservation acquisition, Engelmann, in press; and formal operations learning, Engelmann, 1967.

It is immediately clear that the majority of the present studies obtained at least some positive results, e.g., the experimental subjects were significantly superior on tests of intelligence, language ability, problem solving, etc., as compared to their control group counterparts. Two notable exceptions were the Alpern, 1966; and the Bonney & Nicholson, 1958; studies. In the former study, experimental subjects who participated in an enriched (language development, development of positive attitudes toward education, and familiarization with middle class norms and behavior) nursery program showed no significant gains over the control group which attended a traditional nursery program. The Bonnie and Nicholson studies compared the social adjustment of elementary school children with and without preschool experience. Overall, their results indicated no social advantage for children who had preschool training.

The two major areas of success in the enrichment training programs have concerned language and cognitive development to the extent that these may be differentiated. Most of the programs have succeeded in promoting immediate gains in IQ by the experimental subjects. In some instances the control children have shown a drop in IQ over the enrichment interval, e.g., Gray and Klaus, 1965; Springle, et. al., 1966. Most of the specific intellectual gains have centered upon language operations, vocabulary level, and associated verbal skills. This is probably a function of the fact that language programs, in particular, are the major common theme which runs throughout current intervention endeavors. It undoubtedly stems directly from the preoccupation of American academic and developmental psychologists with language functioning and its role in structuring logical thought. Certain theorists and practitioners are not so certain that language enrichment represents the total panacea for cultural deprivation. It may be that intellectual deprivation is more adequately characterized as a deficit in general symbolic representation rather than language functioning per se.

The advances and improvements demonstrated by the present studies are not free of the usual ambiguities and qualifications. In many cases the initial superiority of the experimental groups failed to hold up over long-range testing. Very often the control groups have "caught up" by the end of the first or second year of formal schooling. The familiar problems of statistical regression and the "Hawthorne-type" effect of participating in a stimulating, experimental group are probably involved in many of these studies. An additional factor concerns the failure of the early elementary grade school settings and conventional academic atmospheres to continue the improved stimulation situations generally found in these intervention formats. A few programs have had specific negative side effects. A highly structured, teacher-lead program, for example, fosters the development of logical thinking but decreased the child's initiative to work on his own, e.g., Lenrow, 1968.

It is not likely that any single specific enrichment orientation or theoretical position will ideally meet the particular requirements of the entire Appalachian setting. While a home centered program without any formal structured learning experience has proved ineffective in increasing IQ or language abilities, e.g., Schwartz, 1966, a combination of structured teaching, free learning experiences, and parent-home involvement may provide the necessary overall impetus to cognitive reorganization and intellectual improvement. As in many similar endeavors, a combination of the most appropriate or viable features of a number of curriculum approaches should provide the best answer to our current problem areas.

SUMMARIES OF REPRESENTATIVE PRESCHOOL INTERVENTION RESEARCH

Alpern, G. D.
The Failure of a Nursery School Program for Culturally Disadvantaged Children.

Population: Two groups of 4-year-old disadvantaged children matched for sex, intelligence, and readiness.

Training Procedures: The experimental group attended a nursery school program which stressed language development, development of positive attitudes toward education and an increased knowledge of middle-class values and experience. The control group attended a traditional-type nursery program.

Assessment Indices: Metropolitan Readiness Test, Form R.

Results: Results of testing showed the following:

(1) There were no differences in intelligence between the groups at the time of either the initial or the second testing.
(2) Both groups made significant gains in all three readiness measures from initial to second testing.
(3) There were no significant differences between the groups in any of the readiness tests.

Baltimore, Maryland, Public Schools
Early School Admissions Project

Population: The subjects were culturally disadvantaged 4- and 5-year-olds from low-income families in substandard or overcrowded inner-city dwellings in Baltimore. 64% Negro, 35% Caucasian, 1% Asian.

Training Procedures: The training was carried out by a highly-trained staff in two full-day and two half-day centers. The general goals were to develop a positive self-concept, develop communication skills, and to increase the child's ability to cope with the physical, social, and emotional environment through the use of a sensory-rich environment. Further promotion of parental understanding of the growth and development of children, and of their own roles as parents, was undertaken via home visits of teachers, meetings for parents and individual conferences in which teachers sought the parents' evaluation of their children's learning.

Assessment Indices: Columbia Mental Maturity Test, Verbal Maturity Scale, An Evaluation Scale for Four- to Six-Year-Olds, A Teacher's Checklist.

Results: The program has shown significant gains by both experimental groups on the various tests, e.g., a mean gain of 20 points over five months for the full-day group on the Columbia Mental Maturity Test. Teachers and parents identified growth in areas such as use of language, visual and auditory discrimination, social contact, caring for own personal needs and use of materials. Kindergarten teachers reported that project children compare favorably with middle-class children, and that the performance of project children evidenced marked superiority in ideas, ability to solve problems and in production of divergent thinking when compared to children from similar backgrounds with no project experience.

The Bereiter-Engelmann Language Enrichment Programs

Population: A number of studies have been carried out with disadvantaged children from various areas using the Bereiter-Engelmann approaches. The original Bereiter study worked with fifteen 4-year-old Negro children from the most disadvantaged stratum of the lowest income, urban Negro group in Illinois.

Training Procedures: The program is built around three daily twenty-minute sessions of intensive direct instruction--one on language learning, one on number concepts, and one on reading. The characteristics of the instructional periods are: 1) fast pace, 2) strong emphasis on verbal responses, 3) carefully planned small-step instructional units with continual feedback, and 4) heavy work demands. The three instructional periods are separated by thirty-minute periods of refreshments, singing and unstructured play activity. Classes are conducted in a business-like manner, but the atmosphere is friendly and pleasant. The academically oriented program is based on two major premises: 1) Mere enrichment of experience is not enough to enable the culturally deprived child overcome deficits which would preclude later academic success, and 2) Training in formal, structural aspects of language will have more value in improvement of academic aptitude than will training directed toward facilitating social communication.

Assessment Indices: Illinois Test of Psycholinguistic Abilities, the Stanford-Binet Intelligence Test, and the Wide-Range Achievement Test.

Results: The Illinois Test of Psycholinguistic Abilities showed that the 15 children in this study were a year and a half below average in language abilities at the time they began the program. Their mean IQ on the Stanford-Binet rose from the low 90's to slightly over 100. By the end of nine months, they scored at the second grade level in arithmetic and at the first grade level in reading on the Wide-Range Achievement Test. Teachers generally reported no difficulty in getting children to participate enthusiastically in the intensive instruction sessions. (The direct instructional method has been used successfully with 4-year-olds from more privileged homes. However, these children appeared to adapt to the method somewhat less readily than lower-class children.)

Bruner, Elaine C.
The Direct Instructional Program for Teaching Reading.

Population: Not specified. Noted only as "culturally disadvantaged special learners".

Training Procedures: The author, along with Siegfried Engelmann, has developed a program for "special learners", based on the hypothesis that these children have reading problems due to their lack of mechanical skills normally found among the abilities of middle-class children. These skills have been identified by the author as the ability to focus on words and parts of words, understanding (through a symbol-sound alphabet) of the oral and visual blending of words, and an understanding of "irregulars".

The material is presented using basic language concepts and teaching techniques from Bereiter.

Results: One group of preschool culturally disadvantaged youngsters were tested at the 2.6 grade level in reading after about 100 hours of instruction by specially trained teachers.

Osborn, Jean
Teaching a Teaching Language to Disadvantaged Children.

Population: Three groups of 15 children, each with three teachers, as well as a control group of 28 children with one teacher in a traditional pre-school program participated in the experiment.

Training Procedures: On the first day of school, children begin learning the basic pointing of identifying statement. The intention is to teach the child to place labeling nouns in a complete statement. ("That is a dog", rather than "dog"). The children then progress to "not" statements, use of plurals, second order statements using adjectives, adverbs, and prepositional statements. Category task and class terms, as well as the use of inclusive words (and, all, or, only, some) are taught.

All teaching is done with small groups, using the Bereiter-Engelmann technique of intense work for short periods of time (20 minutes). The intent of the program is to teach the child a language which contains the requirements of a logical communication system between child and teacher.

Assessment Indices: Stanford-Binet Intelligence Test.

Results: Group I achieved a ten-point gain on the Stanford-Binet from a mean of 95 to a mean of 105. Group II achieved a mean gain of 25 points on the Stanford-Binet from a mean of 95 to a mean of 120. After two years of training, Group III demonstrated a mean gain of 12 Stanford-Binet points from 91 to 102.

The control group gained 8 points from a mean of 95 to 103 after a year of traditional preschool. However, after a year of traditional kindergarten, tests showed a loss of 3 points from the original gain of 8, resulting in a mean Stanford-Binet IQ of 100.

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Bereiter, C.
Acceleration of Intellectual Development in Early Childhood. Final Report, Project No. 2129, Contract No. OE 4-10-008, United States Department of Health, Education, and Welfare, Office of Education, Bureau of Research.

Bereiter, C.
Direct Verbal Instruction Contrasted with Montessori Methods with the Teaching of Normal Four-Year-Old Children.

Population: Subjects for the Montessori group were all the children enrolled in a local Montessori school who would be of kindergarten age the following academic year. They were between the ages of three-ten and four-ten at the time the experiment began. Nineteen children were so identified. The school was a licensed Montessori school that had been in existence for two years, using trained Montessori directresses. Children in the Montessori school were largely from upper-middle-class homes with college educated parents.

Recruitment for the direct verbal instruction group was carried out by telephoning parents of children in the Montessori school and securing from them names of parents whom they knew to be interested in the Montessori school and desirous of having their 4-year-old child in it. Some names were also obtained from the waiting list for admission to the Montessori school. Through this mean 19 subjects were recruited, of whom one was subsequently lost by leaving the community.

One important difference, however, that could not be eliminated so long as intact Montessori classes were used, was the fact that the Montessori children had already had a year or more of schooling in the Montessori school at the time the present study began, whereas none of the children in the direct verbal instruction group had been in school previously.

Training Procedures: Except for the testing to be described, the children in the Montessori school were experimentally untouched. The school day was three hours.

The class to be taught by direct verbal instruction methods was started in mid-October, under the name of the Academic Preschool. It followed approximately the same schedule of days as the Montessori school, but the school day was only two hours. There were three teachers each teaching a different subject in 20-minute sections to groups of children stratified according to level of attainment.

Since the children in the present study were sophisticated in language usage, the basic language program was presented only in the most summary form. Most of the time was devoted to the material on "if-then" reasoning from the advanced language program and to science topics that also involved verbal reasoning problems; e.g., problems involving opposing forces, problems involving deductions from the geological record.

A reading curriculum was used employing the Initial Teaching Alphabet. The curriculum included early introduction of rhyming and first-letter phonics to distinguish rhyming words, early introduction of sentence reading with a small set of sight words, and systematic drill on spelling patterns.

Initially the arithmetic curriculum was modified to accommodate early introduction of negative numbers. However, teaching difficulties required an eventual retreat back to the arithmetic program as used with disadvantaged children. Printing (in initial teaching alphabet) was taught informally but regularly as one of the between-class activities. After four months a fourth subject was added, experimental science, in which a number of short units centering around demonstrations and problems in rule-application were introduced. These included units on plant physiology, weather, and geology. The original schedule of spreading the instructional sessions over two hours by sandwiching periods of semi-structured activity between them was gradually modified until the instructional periods were run one immediately after the other, the less structured activities being all moved to the end of the school day.

Assessment Indices: The Illinois Test of Psycholinguistic Abilities and the Wide-Range Achievement Test.

Results: On the pretest, administered six weeks after the beginning of instruction for the direct instruction group, there was no significant standard-score difference at the .10 level either in total score or subtest scores. Total standard scores on the Illinois Test of Psycholinguistic Abilities remained nearly constant for both groups from pretest to posttest. Using pretest scores as a covariate, however, there was a significant posttest difference in favor of the direct instruction group on the Auditory-Visual Association subtest and in favor of the Montessori group on the Visual Decoding subtest. There was, however, no general interactive tendency; instead of the Montessori group doing relatively better on the non-verbal subtests and the direct verbal instruction group doing better on the verbal subtests, the direct instruction group did significantly better on both types. The only discernible pattern difference seemed to involve the amount of information processing required rather than with modality; the direction instruction group did relatively better on tests involving abstraction whereas the Montessori group did relatively better on tests of simple recognition or memory. An *a posteriori* analysis, using composite scores weighted on this dimension, yielded a significant difference.

On the Wide-Range Achievement Test the direct instruction group significantly surpassed the Montessori group in all areas. Mean grade-level scores for the direct instruction group and the Montessori group, respectively, were 1.46 and 1.19 on arithmetic, 3.43 and 1.01 on reading, and 1.72 and 1.25 on spelling.

Bereiter, C.
Four Approaches to Construction Activities in the Nursery School and Their Relation to Creative Problem Solving.

Population: Subjects were children in four nursery school classes, all largely populated by children of university faculty members and graduate students. Classes A and B (N = 17 and N = 20) were the 4-year-old classes in a cooperatively owed, staff-operated nursery school, Class B consisting of the older 4's and those judged by the teachers to be more mature. Class C consisted of the 4-year-old group (N = 21) in a cooperative nursery school.

Class D (N = 20) was from the same school as Classes A and B, but consisted of the older and more mature of two classes of 3-year-olds. (Total N = 78).

Training Procedures: Groups of nursery school children were given six half-hour sessions of construction activities, using a large assortment of construction materials. Following this were three test sessions in which the children were assigned three construction tasks to be carried out independently without help or suggestions. The tasks were to construct a boat, a rattle, and a bird house. A total of 78 children were involved in four replications of four treatments: Independent Problem-Solving, in which daily tasks were assigned as in the test condition; Independent Construction, in which no tasks were assigned but the children were merely encouraged to make something differenct each day; Guided Problem-Solving, in which teacher and children worked out the solution of construction problems cooperatively; and Guided Construction, in which the teacher directs the children through a predetermined series of steps in the construction of prescribed objects.

Assessment Indices: Photographs of the products were given blind ratings on the degree to which the product represented fulfillment of the task assigned (not originality or esthetic value).

Results: The analysis of ratings provided for the separation of the two treatment factors, guidance versus independence and problem-solving versus construction. Only the first factor showed any significant effect, and this was in favor of guidance over independence. There was no interaction between treatment factors; thus Guided Problem-Solving, which was expected to have greater transfer value to the test situation, produced no better results than Guided Construction, which is popularly believed to discourage creativity.

Bereiter, C.
Teaching Reading to Two- and Three-Year Olds.

Population: Five 2-year-old children and five 3-year-old children of average to above-average language aptitude participated in five months of reading activities.

Training Procedures: The 2-year-olds engaged in free play with a variety of teaching machines and other manipulative devices; the 3-year-olds engaged in teacher-directed group games designed to teach letter recognition, word recognition, and eventually some phonics. In both groups, little visible learning occurred until an activity was introduced which consisted of conventional flash-card drill. Half of the subjects attained some stable sight vocabulary in this way, ranging from 10 to 50 words, and one child acquired some ability to decode novel words.

Assessment Indices: Illinois Test of Psycholinguistic Abilities.

Results: Testing indicated no significant gains in language-related abilities; but there was a significant interaction between treatment condition and changes in verbal versus non-verbal scores, children in the group games condition showing more favorable results on verbal tests while children in the teaching machine condition showed more favorable results on non-verbal tests.

Bereiter, C. & Bender, M.
The Effect of Free-Time of a START Teaching Machine on Reading Ability in the Kindergarten.

Population: Seven kindergarten classes in which a teaching machine was placed for free-time use and seven matching control classes which had no machines.

Training Procedures: The machine was of a type which presented stories both auditorily and visually and which required the child to make choices between printed words in order to keep the story going.

Assessment Indices: A "criterion test" based on words that had been used as response items in the teaching machine program was developed by the authors. The test is considered a simple "test of learning and not of transfer or generalization".

Results: On a recognition test consisting of words used in these choice-frames, every experimental class did better than its matched control class. The difference, using classes as the sampling unit, was significant at the .05 level.

Bereiter, C. & Summers, C.
Children's Preferences for High Versus Low Requency Words.

Population: Subjects were ten boys and ten girls chosen from a single kindergarten class in a small-town Illinois elementary school.

Training Procedures: A paired-comparison design was used in which each high frequency word was paired once with each low frequency word of the same grammatical class. Choices between the two were made by each subject. This was accomplished by use of a 20-by-20 Latin square design which assigned a different combination of the 20 high and low frequency words in each class to each subject, so that all the possible combinations were exhausted.

Words were printed in half-inch high letters of 1½ x 3 inch cards, one word per card. Words were pre-arranged for each subject in accordance with the design described. Subjects were tested individually in a room apart from the classroom, and the testing was completed for all subjects in one session to minimize inter-subject contamination. Words which subjects were to choose between were arranged in two stacks with right-left position of words balanced and randomized.

Each subject made 40 choices--between 20 pairs of nouns and 20 pairs of adjectives. On a random and balanced basis, half the subjects were given nouns first and half were given adjectives first. Motivation to execute the task and obtain the cards appeared very high, so high that children not included in the experiment had to be pacified when it was over by being given word cards for themselves.

Results: For both nouns and adjectives, the children chose more high frequency (familiar) than low frequency (less familiar) words. Both differences were significant beyond the .01 level.

Brison, David W.
Teaching Conservation of Substance.

Population: The subjects were 62 kindergarten children from a middle-class suburban community. They ranged in age from five years four months to six years four months with a mean of five years seven months.

Training Procedures: Twenty-four nonconserving subjects received experimental training designed to induce conservation of substance. Twenty-six matched control subjects were not trained. Training was in the conservation of inequalities of liquid in a situation where the subject's expectation of an event was reversed. The child had to integrate the elements of the conservation situation to obtain a desired reward.

Assessment Indices: The child's performance on the criterial conservation task was scored as correct or incorrect.

Results: Twelve of the experimental subjects showed evidence of acquiring conservation. Five of these subjects gave at least four of five correct conservation predictions. Conservation transferred to substances (clay, sand) not used in experimental training. On extinction items the five experimental subjects with four correct predictions performed similarly to subjects possessing conservation before the experiment.

Engelmann, S.
Teaching Formal Operations.

Population: Subjects were ten preschool children (ages 3 1/2 to 5 3/4), half of whom were relatively culturally deprived Negroes, the other half of whom were relatively privileged Caucasians. Subjects were selected on the basis of teacher judgments that they were the "best talkers" in their respective nursery schools in Champaign, Illinois,--one a summer nursery school for Negro children, and the other a relatively high prestige year-round nursery school. The two groups of children were designated "culturally deprived" and "culturally privileged".

Training Procedures: Five culturally deprived and five culturally advantaged preschool children were systematically taught the skills, concepts and the basic argument form necessary to handle an analogy class of "formal operational problems". After the five to seven week training period, the children were tested on a criterion problem to determine whether or not the training would transfer (thus indicating ability to handle the operation). Children also received a test of conservation of liquid to provide a comparative measure of cognitive maturity. The basic hypothesis was that through the training program, children who were at the preoperational stage as measured by the test of conservation of liquid quantity would be able to perform at the formal operational level (or a more abstract level of cognitive performance on the criterion problem).

Assessment Indices: Various "criterion problems" as well as general task performances.

Results: The hypothesis was confirmed, whether one assumes a strict interpretation of formal operations and therefore maintains that the criterion problem was not formal, or whether on accepts the propositions-about-propositions interpretation of formal operations. According to either interpretation, the experiment shows that children can, with instructions, operate at a cognitive level well above that at which they function normally. All of the 5-year-old subjects (three culturally deprived and three culturally privileged) sucessfully solved the criterion problem. None of these children passed the test of conservation of liquid quantity. The results were achieved through direct instruction.

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Blank, Marion
Cognitive Gains in "Deprived" Children Through Individual Teaching of Language for Abstract Thinking.

Population: Twelve culturally deprived 5-year-old children living in a low socio-economic area of New York City.

Training Procedures: Children were divided into three groups, four in the experimental group, six in the first control group and two in the second control group. The experimental group received individual tutoring for 15-20 minutes per session, five days per week. The first control group remained in a traditional kindergarten setting. The experimental and second control groups received instructions in concepts such as number, size, speed, time sequence, body parts, etc. The second control group, however, was presented these concepts only as incidental information in the course of traditional schooling.

Assessment Indices: Stanford-Binet Intelligence Test and the Leiter Scale.

Results: The experimental group showed marked gains regardless of the subjects' initial level, while neither control group showed marked gains. The experimental group showed fewer gains on the Leiter Scale, but showed greater overall improvement than did the two control groups.

Blank, Marion & Solomon, Frances
A Tutorial Language Program to Develop Abstract Thinking in Socially Disadvantaged Preschool Children.

Population: Subjects were 22 children ranging in age from three years three months to four years seven months, selected from a nursery school in a socio-economically deprived area of New York City.

Training Procedures: The authors feel that the behavior of deprived children reflects a lack of a symbolic system by which to organize the plentiful stimulation surrounding them. They feel that an internal symbolic system can be achieved through the development of abstract language, and that this abstract language can be taught on an individual tutorial basis.

Subjects were divided into four groups matched as closely as possible for IQ, age, and sex. Of the four groups, two were tutored and two were untutored. Each child in the first tutored group received individualized teaching for 15 to 20 minutes daily, fives times per week; each child in the second tutored group received the same training only three times a week. Children from the first untutored group had daily individual sessions with the same teacher, during which time he was exposed to the identical materials as the first tutorial group, and permitted to deal as he pleased with the materials. The teacher was warm and responsive to the child's questions and comments, but did not initiate or extend any cognitive interchange. The second untutored group remained in the regular nursery program with no additional attention.

The first goal of the teaching was to have the child recognize that information relevant to the world was not immediately evidenced but could be and had to be sought from previous experiences. Thus, he was taught to question, to probe, and to investigate. A common denominator of all the training methods was that the child was confronted with situations in which the teacher used no gestures. In order to accomplish the task correctly, the child had to understand and/or use language. Another constant factor was that the child was led to produce an independent response relevant to a situation created by the teacher and to extend the situation set forth by her. This extent focused on having the child discuss situations which did not exist in front of him at the moment but which were relevant to the present situations (e.g., past, future, alternative courses of action, giving explanations of events). It should be noted that each training technique was specifically scaled to overcome a bad deficiency.

Assessment Indices: The Stanford-Binet Intelligence Test and Leiter Scale were administered before and after the four-month training period.

Results: Mean IQ increases on the Stanford-Binet test in tutored Groups 1 and 2 were 14.5 and 7.0 points, respectively, in untutored Groups 1 and 2 the changes were 2.0 and 1.3 points, respectively. Various analyses indicated that the changes in the four groups were significantly different, in that the rise of the tutored groups was significantly greater than the rise in the untutored group.

The results on the Leiter Scale, though somewhat less extensive, were in accord with those on the Stanford-Binet test. Thus, tutored Groups 1 and 2 showed mean increases of 4.5 and 9.5 respectively, while untutored Groups 1 and 2 showed 5.0 and 1.9, respectively. The lower overall gains on the Leiter Scale may also be a reflection of the fact that this test does not require verbal abilities, while the teaching technique emphasizes verbal development.

Several behavioral changes accompanied these increases. For example, three of the children were so excessively withdrawn that they had not uttered any coherent verbalizations during their entire time in school. They also exhibited other severe physical symptoms. Within one month after the program was started, all three were speaking clearly, coherently, and appropriately, and there was a dimunition of all symptomatology. No comparable changes were noted in the two children from the control group who exhibited similar symptomatology.

Bonney, M. E. & Nicholson, A. L.
Comparative Social Adjustments of Elementary School Pupils with and without Preschool Training.

Objectives: The general objective of this study was to present a report of some efforts to evaluate the extent to which nursery school and kindergarten experiences can be shown to make a significant difference in the social adjustments of elementary school children. In brief: Do these children have a measurable advantage in subsequent years in their classroom social adjustments as compared with children who had no nursery or kindergarten training?

Study 1

Subjects: Seventy-eight children in two kindergartens, two first grades, one second grade, and one third grade in two schools in Denton, Texas. The subjects were divided into 39 pairs with one pupil of each pair having attended nursery school. The pupils were matched with regard to sex, father's occupational level, and the number of siblings in the child's family.

Results: It was shown that the pupils who had attended nursery school had a reliable advantage over non-nursery school pupils in receiving positive sociometric choices from their classmates. However, the nursery school group showed a significant advantage in only one of five traits as indicated by teacher ratings on the Winnetka Scale.

Study 2

Subjects: Four-hundred two children in grades 1-6 in a public elementary school in a predominantly lower-middle-class neighborhood of Dallas, Texas.

In this study, questionnaires were sent to all the parents to ascertain whether or not their children had attended a nursery or kindergarten. From these questionnaire results it was possible to select 14 classes in which approximately 50% of the pupils had had some type of preschool training. Approximately one-fourth of the 200 children had attended a nursery school, one-half had attended kindergarten, and the remaining one-fourth had attended both a nursery school and kindergarten.

Results: Classroom social adjustment was measured by sociometric testing and by teachers' nominations. The findings provide no evidence that those pupils who had attended some type of preschool had, as a group, any advantage in personal social behavior over those who had no preschool training. This was true from the standpoint of acceptability by classroom peers and on the basis of teacher evaluations.

Study 3

Subjects: Subjects consisted of four sixth-grade classes in the Denton, Texas, Public Schools.

Assessment Indices: The primary index of social adjustment was a dual criteria sociometric test for preferred playmates and work associates in a classroom group work situation. In addition, the classroom teachers listed the names of pupils considered to be in the upper fourth of their class in overall social adjustment and those considered to be in the lowest quarter of their group on this criterion.

Results: No significant differences were found between preschool and non-preschool pupils in their sixth-grade social adjustment.

Brazziel, W. F. & Terrell, Mary
An Experiment in the Development of Readiness in a Culturally Disadvantaged Group of First-Grade Children.

Population: The experimental group consisted of 26 Negro first-grade children. The control groups consisted of 25, 21, and 20 Negro children. The majority of these children were from farm or part-time farm families.

Training Procedures: The major training focus consisted of a guidance oriented intensive parent-teacher approach to the formation of reading and number readiness. The training elements consisted of a six-week classroom readiness program, parent meetings once a week, and 30 minutes of educational television in the home. The training was directed toward readiness to develop vocabulary, perception, word reasoning, and the ability to follow directions.

Assessment Indices: The Metropolitan Readiness Test.

Results: The experimental group scored at the fiftieth percentile which is the national average on the reading readiness test. In contrast, the control groups scored at the sixteenth, the fourteenth, and the thirteenth percentiles, respectively. The scores of the experimental group approximated the symmetry of the normal curve of development while the control groups' scores were skewed sharply to the left. The experimental group scored slightly above the national average on the intelligence tests. Their IQ score of 106.5 was approximately 16 points above the general expectations for culturally deprived children.

Demonstration and Research Center for Early Education (DARCEE), George Peabody College for Teachers, Nashville, Tennessee.

General Program Description: The Demonstration and Research Center for Early Education has a three-fold mission of research, training, and demonstration-dissimination relative to improving the learning potential of children from low-income homes. This is carried out by direct contact with the children involved and by an extensive program of parent education and intervention. The underlying rationale emphasizes the mother as the chief source of stimulation in the early years for the child within the family setting. She is the agent who imposes the necessary order and structure upon the environment for the child's development of competence and control. In addition, the mother plays the key role in sustaining developing skills and in motivating the child to develop more complex abilities during the early years.

The overall design includes four groups which receive different treatments as follows:

> Group 1--The mother and the child are brought to the center for a training program each week.
>
> Group 2--The child of the family is the only member enrolled in a program.
>
> Group 3--The family has no direct contact with the early training center itself but is visited in the home once a week.
>
> Group 4 is a natural environmental group carefully chosen to match the demographic and structural characteristics of the treatment families, but which receives no planned intervention other than periodic criterion testing.

Gray, Susan W. & Klaus, R. A.
Early Training Project: A Handbook of Aims and Activities.

Population: Consists of four groups of Negro children from Murfreesboro, Tennessee. Experimental Group 1 had three summers of preschool experiences. Experimental Group 2 had two summers of preschool experience. The first control group, known as the Community Control group, was composed of children selected at random from groups from which the first two experimental groups were selected. The Distal Control group was composed of children selected from surrounding areas in the nautral environment chosen to match certain characteristics of the treatment families, but this group would receive no planned intervention other than criterial testing.

Training Procedures: Both experimental groups received actual classroom experiences. The curriculum was designed to prevent the accumulation of deficits generally thought to occur in the development of disadvantaged children. The basic idea was to give the children a more positive attitude toward achievement and particularly toward school-type achievement. The actual material taught in the classroom was those abilities and aptitudes which a child must have upon entering public school if he is to succeed. In addition to classroom experiences, each home was visited weekly by a project worker. At this time the child and the family would receive additional attention and be given additional school-type materials with which he might work at home. The attempt was to involve the entire family in a more positive attitude toward school achievement and to further help the child in his own abilities and attitudes.

Assessment Indices: The Stanford-Binet Intelligence Test and the Weschler Intelligence Scale for Children.

Results: Over a two-year period, the two experimental groups gained an average of seven IQ points. The two control groups lost an average of five IQ points, a statistically significant difference. The authors point out that although the experimental groups' gain was not numerically a large one, it would have been expected that this group would have, without any intervention of any kind, lost IQ points over this period, even before they had entered school.

Gray, Susan W. & Klaus A.
An Experimental Preschool Program Culturally Deprived Children.

Population: The subjects were Negro children from a city in the upper South who were born in 1958 and entered school in 1964. The control group, which numbered 67, was selected from a smaller near-by town to offset diffusion effects. There were certain criterion for selection in the experimental groups. Among these were that the parents' income must be below $3,000, the family breadwinner should be in an unskilled or semi-skilled occupation or unemployed, and the educational level of the parents should be at the eighth grade or below. The median number of children in the families from which the children were selected was five, and half of the homes had no father present.

Training Procedures: Day to day activities centered around achievement motivation, including delay of gratification and attitudes toward achievement (perceptual and cognitive development and language learning). Each group had a specially trained teacher and four assistants. Many materials were provided such as colored blocks, books, and various play equipment. The first experimental group, called T 1, had three ten-week summer school sessions plus weekly contacts with the home visitor during the rest of the year. The second experimental group, called T 2, had two ten-week summer school sessions, plus weekly contacts for the rest of the year. This group, it should be noted, began the program one year earlier than T 1. The first control group, called T 3, was tested before and after the experiment was conducted and also had two-hour weekly play periods during the third summer's ten-week summer school. The second control group, T 4, received only pre- and post-testings.

Assessment Indices: The Stanford-Binet Intelligence Test, the Weschler Intelligence Scale for Children, the Peabody Picture Vocabulary Test, and the Illinois Test of Psycholinguistic Abilities were used.

Results: Group T 1 had a mean IQ of 86 which increased to 95 over the training period. T 2 had a mean IQ of 91 which increased to 96 over the training period. Control group T 3 lost four IQ points and control group T 4 lost six IQ points. These various gains and losses were shown to be significant. No difference was shown between T 1 and T 2 on the Peabody Picture Vocabulary Test, but both T 1 and T 2 surpassed T 3 and T 4 groups. On the Illinois Test of Psycholinguistic Abilities both experimental groups scored significantly ahead of both control groups in every subtest case except motor encoding.

Klaus, R. A. & Gray, Susan W.
Early Training Project for Disadvantaged Children: A Report After Five Years.

This paper represents a summary of the DARCEE Program after five years. In general, the population and training procedures, etc., are the same as were indicated in the previously listed study. The objectives of the DARCEE Program, as stated by the authors, were to develop an intervention package of manipulation of those variables which seemed most likely to be influential in terms of later school performance.

It is significant to note in this paper that a more complete examination of the results of various testings are given. It is noted, for example, that on the Stanford-Binet Intelligence Test, experimental group T 1 made the most improvement while in the program.

T 2, on the other hand, did not show the same improvement in performance, but also did not regress as much as T 1 after the program was completed. The authors suggest that this lack of regression may have been due to the general family superiority of the children in group T 2.

On the Illinois Test of Psycholinguistic Abilities, the two experimental groups scored significantly higher than control groups in 1965 and 1964. However, no significant difference between the two experimental groups and the two control groups was found in 1966. The Peabody Picture Vocabulary Test showed no difference between groups on the pre-test. Post-test showed the two experimental groups significantly superior to both control groups. However, the two experimental groups did not differ significantly from one another, and neither did the two control groups. In ten out of eleven subtests on the Reading Readiness Test, groups T 1 and T 2 scored higher than either T 3 or T 4. The exception was in the test of ability to construct sentences. These differences, however, failed to reach significance.

On both the Metro Achievement Test battery and the Stanford Achievement Test, the experimental groups scored significantly higher than the control groups on over half of the subtests within these tests. On the test of reflectivity and impulsivity, experimental groups scored significantly higher in the reflective direction. A test of assessment of self-concept provided no support for the possibility that the intervention program was damaging to the self-concept of the experimental children. In fact, the only significant difference between experimental and control groups in self-concept was found in the higher score of the experimental group on a test of happiness and satisfaction.

No significant differences were found between the control and experimental groups on reputation among peers, delay of gratification, achievement motivation, and sex comparison differences.

Day, D. E.
The Effects of Different Language Instruction on the Use of Attributes by Pre-Kindergarten Disadvantaged Children.

Population: Eight units of disadvantaged pre-school children were divided into two groups of four each. All children in five units were Negro, two groups had only Caucasian children, and one group was integrated, but most of the children were Caucasian.

Training Procedures: The subjects were divided into two groups--A and B. Group A classes were organized following plans for language instruction. Each member of the teaching team met with a group of not more than seven children for from ten to thirty minutes. A highly structured plan, similar in many respects to operant conditioning was followed. The teacher taught the children what response to make, called for them, and reinforced the children. When a child failed to give the expected response, the teacher provided it without sanction. The curriculum was sequentially developed from identification statements to elaborated descriptions and simple noun-verb deductions. Group A was taught to respond most often as a total group. The teaching style was similar to audio-lingual methods.

Group B was organized following a more traditional unit of work approach. The teaching team developed teaching units based on assumed interests of the children. Both receptive and expressive language was stressed. The behavior of the teacher and content sequence were not classified.

Assessment Indices: All children were given a language screen, and descriptive responses were recorded verbatum. A modification of Sigel's System for Organizing Language Grouping Preference Behavior was used in analyzing the attributes that children use in description. Two independent judges grouped each response into one of the three categories.

Results: A difference in the total number of words or phrases used was found between the two groups. However, no significant difference between the groups on total language production was found. Group B children, taught by a developmental unit of work approach, were more apt to describe objects by function and/or use than the children taught by the highly structured method. In Group A, the children produced more concept words (indicating that the object was a member of a class or group) than Group B. All children made many more kinds of responses in which they named a part of (descriptive part-whole words) each object than they made relational-contextual, or categorical responses.

Part-whole responses were analyzed by three separate groups. Nouns alone--no significant differences between the groups were found in using nouns in describing the object as a most frequent type of response. Adjectives with nouns--there was no difference between the two groups; neither group used adjectives with nouns to any degree. Color or form responses--the subjects taught by the highly structured method (Group A) used the color, shape, and texture of the object in description more than did Group B.

Deutsch, M. & Goldstein, Lillian
An Evaluation of the Effectiveness of an Enriched Curriculum in Overcoming the Consequences of Environmental Deprivation.

Population: A group of 4-year-old Negro culturally deprived children living in New York City.

Training Procedures: The training program was kept flexible and exploratory in nature. Emphasis was placed upon the development of auditory and visual discrimination. This paper presents an interim report on a five-year program involving two years of preschool and grades one through three of elementary school.

Assessment Indices: The Stanford-Binet Intelligence Test, the Peabody Picture Vocabulary Test, and the Illinois Test of Psycholinguistic Abilities were administered.

Results: On all tests administered, the mean performance score of experimental subjects was significantly higher than scores of the control groups. This has held true over the four-year period being reported on in the present paper. Across this same period of time, the mean scores of males on the Peabody Picture Vocabulary Test has been significantly higher than that of females in the experimental groups. It is interesting to note that testing after the second grade has indicated that the experimental groups' advantage has disappeared.

DiLorenzo, L. T. & Salter, Ruth
An Evaluative Study of Pre-Kindergarten Programs for Educationally Disadvantaged Children: Follow-Up and Replication.

Population: There were 1,235 subjects used. Of these, 225 were non-disadvantaged subjects concentrated in two school districts that considered association with children of different socio-economic backgrounds an essential part of the program for the disadvantaged. The remainder of the population, 1,010 children, were classified as socio-economically disadvantaged children.

Training Procedures: The program was divided into several different types of training procedures. These range from a non-structured free-play type program to a highly structured program attempting to teach structured cognitive activities. The authors' intention was to determine the effectiveness of three kindergarten programs for the disadvantaged on a longitudinal basis, thus necessitating the unusually large subject population.

Assessment Indices: The Stanford-Binet Intelligence Test, the Peabody Picture Vocabulary Test, the Illinois Test of Psycholinguistic Abilities, and the Metropolitan Readiness Test were used.

Results: It was first found that a pre-kindergarten experience was beneficial for the disadvantaged child. This is shown by the gain of IQ points across the testing periods and also by teacher assessment of classroom behavior and intellectual growth. The most effective pre-kindergarten programs were those with the most specific and structured cognitive activities. Finally, it was found that the pre-kindergarten experience was more effective for disadvantaged whites than for disadvantaged non-whites as indicated by scores on the various assessment indices.

Feldmann, Shirley
A Preschool Enrichment Program for Disadvantaged Children.

Population: The subjects were 4-year-old children from New York City, socio-economically disadvantaged Negro and white.

Training Procedures: In general, the program had two aspects which were the development and evaluation of an enriched curriculum and the evaluation of the effectiveness of that curriculum on later school achievement. The program is a two-year demonstration research nursery program set up in cooperation with the Board of Education in the Department of Welfare in New York City. Initiated in 1962, this is a report on the first year's program.

Various general characteristics of the training procedure which were listed included increased training for teachers and increased contact with parents, development of an ordered environment within the classroom, a deliberate repetitious use of verbal instructions within classroom routines, an attempt to develop self-image in the child through use of Negro and white dolls and various mirror-type activities. In addition, great emphasis on language including continual verbal labeling of objects, use of names, use of child-teacher contacts, etc., stories and experience was used to develop concepts of size, shape and color. Music activities were used to develop auditory discrimination skills.

Fifteen children met two hours a day, four days a week for the school year. There were home visits and workshops scheduled for parent participation. A control group participated in testing only.

Results: At the time this paper was written, no results of testing were as yet available. However, it was noted by teachers and experimenters that the experimental subjects had begun using short, descriptive sentences instead of former one-word responses or requests. Descriptions of home happenings and verbalization of needs were frequently noted. The children seemed more able to listen and respond to verbal directions with greatly increased attention span. Furthermore, it was especially noted that there was a great increase of interest toward school-oriented activities by both children and parents.

Frost, J. L.
Effects of an Enrichment Program on the School Achievement of Rural Welfare Children.

Population: First, second, and third grade children enrolled in three north central Arkansas schools were selected in September,1966. A total of 574 children were subjects for this study. Approximately 39% were welfare recipients.

Training Procedures: Three objectives, which determined the training procedure, were stated. These were: 1) to determine the effects of an elementary school enrichment program on intelligence, personality and academic achievement of welfare recipient children; 2) to compare the intelligence, personality and academic achievement gains of welfare recipient children to non-welfare recipient children; and 3) to compare the intelligence, personality and academic achievement gains of children enrolled in an enriched program with children enrolled in regular programs. Three schools were involved in the experiment. These were designated as "X", a school with a 10-year-old, highly developed enrichment program, and "A" and "B", typical schools of a poverty stricken area. The experimental subjects received no special training other than that which they would normally receive at the school in which they were enrolled.

Assessment Indices: The California Test of Personality, the California Short-Form Mental Maturity Test, and the California Achievement Test (complete battery) were administered.

Results: It was first noted that there was no pattern of superiority for any of the three schools in regard to the achievement of all enrollees, including welfare recipients. That is to say, the enriched program of school "X" did not lead to superior IQ gains or superior post-test scores over schools "A" and "B". Non-welfare subjects achieved significantly higher scores in academic areas, mental maturity and total achievement, with welfare recipient subjects showing greatest deficiencies in reading and language. It was noted, however, that the personality development of rural welfare recipient children did not correspond with their low level of academic achievement. No significant differences were noticed in achievement between the males and females.

Hayweiser, Lois, Massari, D., & Meyer, W. J.
Evaluating Behavioral Change During a Six-Week Pre-Kindergarten Intervention Experience.

Population: Forty-five children were selected as being in greatest need of a pre-kindergarten program in a given school neighborhood. The sample met the poverty criterion with respect to family income, and were further known to the school district officials either through social agencies or prior encounters with the family because of problems arising with older children in the family.

Training Procedures: The children were enrolled in a six-week, pre-kindergarten enrichment program which was relatively unstructured in nature. Tests were administered before and after the six-week period in order to evaluate certain changes in the children's behavior. Four prime objectives were listed: 1) to evaluate changes in the children's willingness to emit responses to various cognitive demands of the Stanford-Binet Intelligence Test. The authors also attempted to assess cognitive style, impulsivity, etc., 2) to evaluate the adequacy of the child's social behavior and determine the relationship between the teacher's perception of the adequacy of the child's social behavior and the Stanford-Binet gain, 3) to examine teachers' as compared to aides' perceptions of the child, 4) to assess the the effects of a six-week intervention experience against children from the same population not having had this experience.

Assessment Indices: The Stanford-Binet Intelligence Test (Form L-M), Walk-A-Line Slowly Test, Draw-A-Line Slowy Test, Perceptual Speed Test, the Ziegler Behavior Inventory, the Caldwell Inventory of Home Stimulation, the Adaptive Behavior Acting Scale, and the Syracuse Scales of Social Relation.

Results: The average gain on the Stanford-Binet was 6.1 in IQ points. It was found that a tendency toward the greatest improvement on the impulsivity test was shown by those children who initially performed at a better level.

Neither teachers or aides felt there was a significant change in the children's social relations over six weeks. All rated children at the low end of the social scale. Aides rated children higher on pre-test than teachers, while both teachers and aides tend to rate children consistently from pre- to post-test.

A general trend for both verbal and performance items on the Stanford-Binet Intelligence Test was toward greater emission of work responses. The Adaptive Behavior Rating Scale showed changes in the direction of higher ratings on post-test and suggests that the children developed more adaptive behaviors as defined by the teachers. Classroom observations showed the teachers as using blame more than praise with the children.

Both the Walk-A-Line Slowly and the Draw-A-Line Slowly Test of Impulsivity were seen as being significantly related to the Stanford-Binet Intelligence Test in both pre- and post-testing. Also, teachers' and aides' perception of adaptive behavior of children was found to be related to impulsivity and the Stanford-Binet performance.

Hortwitz, Frances Degan & Rosenfeld, H. M.
Comparative Studies of a Group of Headstart and a Group of Non-Headstart Preschool Children.

Study 1

Population: The Headstart group consisted of 24 children, 16 males and 8 females, with a mean age of five years two months. There were 15 Negro, 7 Caucasian, and 2 Mexican-American children. Nineteen had attended half-day nursery school for low-income children, while five had no previous nursery school experience. The non-Headstart group consisted of 20 children from the University of Kansas Nursery School. There were 11 females and 9 males with an average age of four years two months. All were Caucasian. Eleven had previous nursery school experience.

Training Procedures: In Part 1 of this study there was no training procedure as such. The experiment consisted of administering a series of tests to the two groups of children in order to assess differences between the groups.

Assessment Indices: All children were given medical and dental examinations. In addition, the Peabody Picture Vocabulary Test, the Preschool Inventory (PI), a behavior inventory, a psychological screening procedure, and a parents' social experience inventory were administered.

Results: On the Peabody Picture Vocabulary Test, the Kansas University children did not change while the mean number of correct responses from the Headstart group increased from 39.6 to 44.6. However, at both the first and second testing, the Kansas University children had a significantly higher mean number of correct responses when compared to the Headstart group.

On the Preschool Inventory, Kansas University children performed significantly better than the Headstart children in all areas in both testings with the exception of these three areas: Basic Information and Vocabulary, Number Concepts and Ordination, and Concepts II--on the second testing.

The Social Experiences Inventory filled out by parents of both groups indicated that the Kansas University parents tended to reflect more extra home involvement and related experiences. The University parents had more hobbies, obtained more play material for their children, and in their homes there were never more than four children to a bedroom as there were in six of the 23 Headstart homes. Also, seven of 23 Headstart parents reported their children watched television five to seven hours a day, whereas no Kansas University parent reported that much television viewing by their children.

It was noted that although Headstart children were a year older, they were significantly below the nursery school children in vocabulary skills. The Headstart children showed an increase of four weeks in vocabulary skills over the summer intervention program, but the authors feel that it cannot be concluded that this change is a result of learning experience in the Headstart program. They feel that familiarity with the tester in the testing situation may have been enough to increase the Headstart children's scores to this extent. Change was evident in five of six content areas on the Preschool Inventory, but the change was not great enough to bring the Headstart children up to the performance level of the nursery school children. The authors feel that a good deal of this slight change in the Headstart subjects can be attributed to "warm-up" effects as well as to the Headstart experiences.

Study 2

Population: The sample was drawn from the overall sample described in Study 1. From the Headstart group, a random sample of nine males and nine females was chosen. From the Kansas University, a random sample of seven males and seven females was chosen.

Training Procedures: The three-stimulus, simultaneous discrimination problem was administered until each subject had made 18 consecutive correct responses, or had received 54 trials. The first task was a discrimination task and involved pushing a red lighted button which might come up in any of three positions. The second task involved two buttons and the subject pushed the left one if both lit up green and the right one if both lit up red. Subjects were told whether or not they had given correct responses.

Results: No overall differences were found between the two groups on discrimination tasks. On the difficult successive problem, there was a difference between the two groups, with no Headstart children among the learners. Among the Headstart children, boys seemed to show faster development than girls.

Study III

Population: Seven children from each group (Headstart and Kansas University) who were consensually rated as least responsive where chosen for this study. Subjects included five girls and two boys from the Headstart group and four girls and three boys from the Kansas University group.

Training Procedures: The objective of the study was to describe the nature of the child-adult interaction in a selected sample from the two groups. Three classes of responses were measured: visual, vocal, and mental by direct objective assessment. These classes of responses were measured during an experimental session in which the child was working with an adult teacher in a picture task.

Results: Effective reinforcers served to maintain a child's attention to a learning task. Increasing a child's attention to, and interaction with, rewarding adults should eventually increase the general effectiveness of social reinforcers in learning situations. Relevant cues among Headstart children may be temporarily deficient in an initial encounter with a strange middle-class teaching situation. In particular, the Headstart children appear to be searching for indications of approval or disapproval from the teacher. It was noted that persistent behavioral deficiencies of the Headstart subjects appeared to be reversible. The major difference between the Headstart and the middle-class groups in base line assessment appears to be in the area of vocalization. A major implication of this study is that lack of quick adaptation to testing situations may produce misleadingly low scores among Headstart and other lower-class groups.

Lenrow, P. B.
Preschool Socialization and the Development of Competence. Summary of an Exploratory Research Project.

Population: Seventy-five children were recruited to represent a broad cross-section of families in a California community. An equal number of boys and girls from families of higher socio-economic status and lower status were assigned to each of the three intervention groups. All children were within six months of the fifth birthday. Thirty-four percent of each group were Caucasian, 56 percent were Negro, and ten percent were Oriental or Mexican-American.

Training Procedure: The experiment was built around three separate preschool programs, each of which lasted three hours a day, five days a week for ten weeks. Each preschool enrolled 25 children and provided a ratio of one adult, in addition to the head teacher, for every five children. The three programs had many other factors in common. They were all conducted under one roof and had physical settings that were virtually identical, including floor plans and available equipment. Their common facility was centrally located with respect to the children's homes in all parts of the community, and the children shared busses twice a day over routes that acquainted them with each other's neighborhood.

The three programs were called the convergent, divergent, and the mixed program. The convergent program attempted to promote competence in conceptual operations based on logical thinking. Two half-hour periods were regularly scheduled in which the teacher presented specially selected materials and demonstrations designed to engage the children in the formation of specific concepts. In the mixed program, two half-hour periods were regularly scheduled in which the children were encouraged to explore what they could do with alternative sets of art or construction materials that had been arranged in advance by the teacher. In order to assure that each child was regularly exposed to the specially organized activities in the convergent and the mixed programs, children in these programs were permanently assigned to groups of five, each group with its own assistant teacher. In these groups, the children moved through a regular schedule of activities each day. In the divergent program, few regular activities were scheduled. Children were not assigned to small groups and were seldom presented with pre-selected sets of material by the teacher. Rather, the children were encouraged to try whatever interested them in the entire setting and the head teacher attempted to create learning opportunities from difficulties, choices, questions, or discoveries that emerged in the children's spontaneous activity.

Assessment Indices: Each child was given a brief performance test of logical operations. The Stanford-Binet Intelligence Test and the Draw-A-Man Test were administered. Each child was observed in a standard free play situation having been given no directions or restrictions. After nine months of kindergarten or first grade, the Stanford-Binet Intelligence Test and the Draw-A-Man Test were repeated. Extensive interviews took place in the homes with the mothers in order to assess home settings.

Results: No differences in IQ were found among the three groups at the end of the preschool or at the end of the first primary school year. There were 110 differential effects found in confidence or initiative in exploring unstructured or free play situations between the beginning and end of preschool. However, at the end of the first year of primary school, children in the convergent group showed less initiative in exploring and shaping new and uncertain features of the classroom. Children in the mixed group were described as more original. Children in the divergent group were described as more independent than children in the convergent group. No overall differences in coping were found between the divergent and mixed group.

The longitudinal study of the same data considered children irrespective of their preschool programs. In this analysis, high socio-economic status children were found to achieve significantly higher IQ scores on all three testing occasions than low socio-economic status children. The author reports higher ratings on opportunities for learning in the home settings of high socio-economic status children.

The single home background variable that was found to differentiate between slow socio-economic status children who gain in IQ and those who dropped between the preschool and the follow-up was family size. Those who dropped in IQ came from large families, while those who gained came from smaller families. Among low socio-economic status families, children from smaller families showed greater confidence and initiative in exploring new or uncertain features of structure and free play situations in school. Confidence and initiative in exploring in preschool was found to be significantly correlated with gains in IQ between preschool and follow-up testing.

Michigan Headstart Evaluation and Research Program: A Report to the Institute for Educational Development by Michigan State University and the Merrill-Palmer Institute.

Population: The subjects were all children chosen at random from various Headstart classes throughout the state of Michigan. The sample was selected so that group diversity represented in the population would be reflected in the sample. All of the children were English speaking, but represented a wide range of community type--Caucasian, Negro, Indian, Spanish-American. There were 161 children selected from 17 classes in five communities. Fifty percent of the sample was randomly selected for the Preschool Inventory Test, and 25% of the class was randomly selected for the Stanford-Binet Intelligence Test.

Assessment Indices: Measurement devices included the following: The Stanford-Binet Intelligence Test, Form L-M (Wright's method used for securing abbreviated score), the Caldwell Preschool Inventory Scale, the OEO Behavior Inventory, the OEO Parent Activity Form, parent interviews, staff member information, medical-dental records, the Facilities and Resources Inventory as applied to a given Headstart Center, an observor's rating form, and Beller Scales.

Results: Results showed the subjects making significant gains on all eight variables in the Beller Scales from pre- to post-testing. Various assessment indices pointed out that the Headstart program strengthened the children's emotional stability and task-oriented interactions with the adults and increased their "work motivation". Only a small amount of change on measures of verbal behavior, social interaction, and communication initiation was noted. All children tested achieved significant gains on the Preschool Inventory, while three of the seven programs tested showed significant gains on the Stanford-Binet Intelligence Test. It may be noted that no control groups were used in this survey.

Painter, Genevieve
The Effect of a Rhythmic and Sensory Motor Activity Program on Perceptual, Motor and Spatial Abilities of Kindergarten Children.

Population: The subjects were selected from a public elementary school kindergarten class of 40 children with normal IQ and include the 20 children in the lower 50% of the class as determined by Goodenough Mental Age score. These subjects were placed in two groups which were matched on IQ, chronological age, mental age, and sex.

Training Procedures: Twenty-one half-hour training sessions were given to the experimental group, extending over a period of seven weeks at a frequency of three times a week.

Assessment Indices: The Illinois Test of Psycholinguistic Abilities, the Goodenough Draw-A-Man Test, the Beary Geometric Form Reproduction Test, the Stanford-Binet Intelligence Test, and a Sensory-Motor Performance Test were administered.

Results: The program of rhythmic and sensory motor experiences did bring about significant gains in specific learning and skills, namely, body image, perceptual motor integration, and psycholinguistic competence.

Parker, R. K.
Assessment of Children Participating in a Comprehensive Attack on Familial Poverty.

On April 1, 1961, the Office of Economic Opportunity started an experiential project entitled PROJECT KNOW-HOW (PKH). It provides a four-pronged assault on poverty through 1) a preschool training program for children beginning at age one and continuing until the participants are of school age, 2) an assisting mothers' program, 3) a fathers' program, and 4) a family health program. Preschool training rests on the assumption that mental maturation and intellectual development are a consequence of a suitable array of environmental experience.

Population: The program began with 30 children divided into two curricula which can be relatively differentiated, for comparative purposes. The overall plan proposes the addition of 30 one-year-old children each year until the maximum size of PROJECT KNOW-HOW reaches 150 children during the fifth year of operation. There will be two teachers and a maximum of five assisting mothers per 15 children in each preschool setting. There are two control groups, one composed of families which meet project criterion but do not participate, and a middle-class group.

Training Procedures: The morning activities for the children of the preschool program are devoted to individual and group instruction provided by the teachers, who in turn are assisted by the mothers. After lunch, the children nap while the mother participates in another facet of the educational program. This curriculum concentrates on the content areas of conventional high school home economics courses and relationships within the family. For providing assistance to the teacher, the mothers receive a small salary which is not large enough even in coping with their sub-marginal local employment, to place them in competition with their husbands as breadwinners. Another integral aspect of the overall program is the fathers' program, which is designed to reinforce the father in his role as breadwinner, head of household, and parent. This being attempted through the use of various educational classes, job-hunting services, personal counselling, etc.

Assessment Indices: It is planned that a number of various assessment indices will be applied when the sample becomes advanced enough for results to be obtained. Among these indices will be the Bayley Infant Scales of Development, the Piaget Infant Situation Tasks, the Palmer Battery, the Stanford-Binet Intelligence Test, the Wechsler Scale for Preschool Intelligence, the Shaffer Language Development Check List, the McCarthy-Templin Speech Task, the Illinois Test of Psycholinguistic Abilities, the Preschool Attainment Record (PAR)-A Social Development Test, the Metropolitan Readiness Test, and the Frostig Developmental Test of Visual Perception.

Results: Results are not yet available on the PROJECT KNOW-HOW experiment. When testing does take place, the following hypotheses will be tested: 1) Children participating in the preschool training program will develop at a normal rate or better. 2) Participating mothers will show greater interests and confidence in the role of homemaker and less interest in work outside the home. 3) Fathers will show increasing interest and confidence in their roles as fathers and breadwinners.

Pennsylvania Preschool Project:

Henderson, A. S.
1964-1965 Annual Progress Report to the Ford Foundation on Preschool and Primary Educational Project.

Population: This project served over 1,000 children from a number of school districts located in the Harrisburg, Pennsylvania, area.

Training Procedures: In general, there were two separate training programs in effect during the project. One was a short-term summer school program and the other was a year-round school program The summer school program was accompanied by a parent education program involving visits to the home by teachers and/or direct case service by social workers. The year-round program placed greater stress on language development and a more ordered and sequential introduction of new materials and experiences to the children.

Assessment Indices: The Illinois Test of Psycholinguistic Abilities and the Peabody Picture Vocabulary Test.

Results: Subjects from the summer preschool project and the year of parent education and assistance from teachers and social workers did not differ significantly from the control group on the Peabody Picture Vocabulary Test or the Illinois Test of Psycholinguistic Abilities. The children who were participating in the year-round program were tested after a year of preschool and three months of kindergarten. The experimental group had significantly higher Peabody Picture Vocabulary scores than did the control groups. The groups did not, however, differ on the Illinois Test of Psycholinguistic Abilities. At the time the two groups were ready to enter first grade both were compared on the Metropolitan Readiness Test. Results showed that the groups were about equally "ready"; there were no statistically significant differences notices.

At the end of the project teachers were asked to list what they felt were the main accomplishments of the program. Two-thirds listed social, emotional or motoric gains. Less than 25% listed intellectual gains as a main accomplishment of the program. Over one-half of the summer teachers did not list any cognitive or language accomplishments. Almost all of the teachers perceived key learning problems to be of the social nature.

Curtis, Caroll A. & Berzonsky, M. D.
Preschool and Primary Education Project, 1966-67. Annual Progress Report to the Ford Founcation. Conducted for the Council of Human Services, Commonwealth of Pennsylvania, Harrisburg.

Population: Subjects were children from a lower socio-economic background in seven Pennsylvania school districts.

Training Procedures: There were five facets to the training procedure: 1) A diagnostic remedial language program was instituted. 2) A program to provide educational experiences for the disadvantaged children was begun. 3) A parent education program through meetings and home visits was developed. 4) Improved level of social services was aimed at social problems related to the preschooler's academic performance. 5) An in-service training program for teachers and other personnel was instituted.

Assessment Indices: The Illinois Test of Psycholinguistic Abilities, the Peabody Picture Vocabulary Test, the Metropolitan Readiness Test, and the Metropolitan Achievement Test were administered.

Results: Analysis of Peabody Picture Vocabulary Test scores demonstrated that in two of seven school districts, children made significant gains in IQ score. Social workers and teachers felt that the parent education program enhanced acceptance on the part of the family. Observations indicated that children were provided with a level of social services which they would not otherwise have had.

The in-service educational aspects of the teacher training program were functional in providing the staff with direction concerning the overall objectives of the project. Opinions expressed by the staff point out the need for more adequate communication within the local districts.

Sibley, Sally A.
Behavior Modifications with Disadvantaged Pupils.

Population: Subjects were economically deprived children from two to eight years of age, chosen from teacher referrals of children exhibiting "problem behavior". Seventy-five percent of the subjects received individually prescribed treatment rather than group programs. Eighty-eight percent are deceleration problems or involve primarily behavior to be discouraged, while twelve percent are acceleration problems involving deficit behaviors. Seventy-five percent of the subjects of "problem behavior" pupils are male. Typically, agression, inattention, failure to follow directions and lack of participation are the problems referred.

Training Procedures: Most behavior modification studies of children involve relatively clear and isolated behavior patterns. At the Durham Education Improvement Program (EIP), where this study took place, more complex methods of behavioral classification have been investigated. EIP categorizes classroom behavior into several types. They are: 1) desirable (e.g., self-directed activity, paying attention, sharing and helping, social interaction, seeking support, and following directions passively); 2) inappropriate (e.g., self-directed activities but at wrong time, sharing and helping but at an inappropriate time, social interaction but at a wrong time, observing passively--being distracted from ongoing activity, and responding to internal stimuli--no observable interaction with the environment); 3) unacceptable (e.g., assultive behavior--direct verbal or physical attack or distruction of property, negative attention seeking behavior--loud or annoying disruption, manipulating and directing others, resisting authority and flight--leaving the authorized limits of travel).

In a behavior modification study, the teacher seeks to apply learning principles with the intent of treatment and correction of maladaptive, deficient or undesirable pupil behavior. Because most EIP studies involve the teacher's reaction to the subject as a major independent variable, a scale of teacher behaviors has been set up. The following is a partial list of some of these behaviors. A behavior may be positive, that is an overt approval of the pupil's behavior, either physically, verbally, or gesturally. Teachers' behavior may be social, in which he engages in a non-academic conversation having neither overt approving or disapproving connotations. His behavior may be neutral in which academic information giving and attending without approving or disapproving or structuring in an academic context takes place. The teachers' behavior may be structuring, that is he states the desirable or the undesirable aspects of the pupil's behavior before it occurs. His behavior may be questioning, that is he asks the pupil an academic question which requires a specific verbal or motor response. He may attempt to redirect or restructure by stating a desirable behavior expected after previous structuring and after inappropriate behavior has occurred. He may also make use of negative behavior by stating the restricted behavior after it has occurred and noting that it is a restricted behavior.

Assessment Indices: Data was collected with a standard 20-event recorder which is equipped with a 20-button microswitch panel which the technician uses in the manner of a typewriter. The technician can memorize the keyboard so that lapses in observation can be avoided. Continuous records from which deviations as well as frequency can be computed are generated. Relevant variables can be monitored on channels running simultaneously, and sequences of behavior are readily obtainable.

Results: The general emphasis of the behavior modification programs is on reinforcing and maintaining desirable behavior rather than simply eliminating undesirable behaviors through punishment. The goal is to teach the child new ways of responding to the classroom situation. The changes required of the teacher may be simple increases or decreases in her baseline behavior, or they may be drastic modifications of her interactions with the child. Actually, there are always two studies ongoing, modification and training of the teacher and modification of the child by the teacher.

In most studies the successful modification program is followed by a reversal or withdrawal of the program. The purpose of such a condition is to demonstrate control of the child's behavior. The success of these present studies indicates that a teacher trained in behavior modification can generalize her knowledge to new cases.

Sigel, I. E. & Omstead, Patricia
Modification of Classificatory Competence and Level of Representation Among Lower-Class Negro Kindergarten Children.

This experiment is a study of the phenomenon which has been observed among lower-class children regarding an inability to classify pictures of objects. That is to say, when the children are given pictures of, for example, musical instruments, they are unable to say that the pictures are all alike in that they are of musical instruments. Rather, they tend to make up a sequential story regarding the instruments or to say nothing at all about them. The authors hope to be able, through various training procedures, to develop the ability to group and classify in these children.

Population: One hundred seventeen children were drawn from the kindergartens of representative, inner-city, lower-class schools in Detroit, Michigan. These children were all identified as lower socio-economic class, based on school record information, parent educational level and occupation.

Training Procedures: The children were all given a categorizing test in which they were shown a group of actual objects and pictures of these objects and asked to explain in what way they were related. Children who produced only 50% or less grouping responses on the object-picture categorizing test (combined scores) were assigned to an experimental condition. These are referred to as low responders. Since the authors wish to prepare for eventual attrition, and also to provide a test for style modifiability through training, a group of high responding children, who produced at least 80% of their responses in one category, were included in each of the training groups. Six groups of children were established, five of which will receive the particular types of treatment being experimented upon and the sixth being a no-treatment control group. The five training groups were 1) the OT group of children, trained with objects alone; 2) the PT group, trained with pictures alone; 3) the OPT group, trained with objects and pictures; 4) the VI group, which received verbal experiences; and 5) the RP or role-playing group in which children spent time acting out real or imagined role of inanimate objects and animate objects; and 6) the NT group which was a control group.

The children were involved in a total of 20 sessions of approximately 15-20 minutes five days a week. The teacher would take the children into a separate room where they worked just with these children, employing objects or pictures of classes of items such as musical instruments, containers, etc. In the verbal interaction condition, the teacher took the relevant group of children and read them a story, talked to them or provided them with other verbalization experiences. For the role-playing condition, the teacher was instructed to create stories and fantasy-type activities with familiar and even unfamiliar type settings.

Assessment Indices: The Object-Picture Categorization Test, A Haptic Perception Task, the Motor Encoding Task (a subtest of the Illinois Test of Psycholinguistic Abilities), and Geometric Sorting and Preference Tasks were administered.

Results: It was found that those children in the classification training program showed significant changes as follows: 1) an increase in grouping response, 2) provided more articulate verbal labels for their groupings, and 3) used a variety of bases for grouping, such as color, form, some structural responses, more relational and categorical responses. The training influenced the child's capability not only in grouping but in the variety of criteria employed for grouping. There was no increase in the child's ability to employ representational materials. There was no differential effect as a function of the media used in the classification training. The discrepancy in capability in sorting objects as compared to pictures in the pre-test did not differ significantly from the same relationship in the post-test.

The children were re-examined eight months later. At that time, the experimental group did not differ significantly from the control group in frequency of grouping on single dimensions. The control group increased in their ability to group white the experimental group stayed the same. The classification training groups continued to employ more multiple criteria for grouping than the non-classification groups.

Smilansky, Sarah
Progress Report on a Program to Demonstrate Ways of Using a Year of Kindergarten to Promote Cognitive Abilities, Impart Basic Information and Modify Attitudes which are Essential for Scholastic Success of Culturally Deprived Children in Their First Two Years of School.

Population: Three hundred six 5-year-old Israeli children were divided into four experimental groups and four kindergarten control groups.

Training Procedures: Normal class size (35) was used, and regular classroom teachers worked with the experimental and control groups. The experimental group teachers, however, had assistance from and materials given to them by certain specialists. It is part of the author's thesis that it is possible in the regular kindergarten to develop competencies in the children by defining for the teacher what needs to be taught, and by training her in three main things: 1) To use measurement tools to determine the child's level of achievement, 2) to measure progress, and 3) to seek different methods to work with each type of child.

Assessment Indices: The Stanford-Binet Intelligence Test and the Wechsler Intelligence Scale for Children were administered.

Results: At the end of the first year, the experimental group scored significantly higher than control groups on both tests. The lower the child's initial IQ, the greater gain he showed on the post-test. Throughout the first grade, the experimental groups were seen by teachers as significantly better able to cope with scholastic demands (including studies, emotional and social behavior) than other children in the same class.

Spicker, H. H., Hodges, W. L., & McCandless, B. R.
A Diagnostically Based Curriculum for Psycho-socially Deprived Preschool Mentally Retarded Children: Interim Report.

Population: The subjects were 60 5-year-old children having IQs of from 50 to 85 who came from the lowest socio-economic class (as determined by the Warner Index of Socio-economic class). Two of the children were Negro while the other 58 were Caucasian. It was noted that the average mother had an eighth grade education and the average father had a seventh grade education.

Training Procedures: The sample was divided into four groups of 15 children per group. The first group received a diagnostically based curriculum the second was a regular kindergarten class, the third a regular control group, and the fourth a diffusion control group (15 children not living in the immediate geographical area). Each child in the group receiving the diagnostically based curriculum was tested and his learning difficulties were diagnosed. The teachers then attempted to correct the specific problems. This group also studied language through the use of stories, movies, acting out, using hand puppets, etc. Art, music, and physical education were used in teaching names of color, body parts, etc. Proper eating habits were encouraged during meals, brief structured lessons on various subjects were given daily, and the children had various field trip experiences.

The children in the regular kindergarten class received no unique intervention other than the administration of various assessment indices. They were enrolled in a regular public school kindergarten. The 15 children in the regular control group received no schooling whatsoever and interacted with experimenters only at time of testing. A diffusion control group (distal) was set up in order to assess the potential parental and peer group "contamination" of subjects.

Assessment Indices: The Stanford-Binet Intelligence Test, the Peabody Picture Vocabulary Test (Form A), and the Illinois Test of Psycholinguistic Abilites were administered.

Results: All four groups made reliable gains from pre-test to post-test. Group 1, the group receiving the diagnostically based curriculum, did not score significantly higher than the kindergarten control group, but both of these two groups did score significantly higher than either the regular control or the diffusion control groups on IQ scores. The diagnostically based curriculum group made significantly higher gains than the other three groups on the Peabody Picture Vocabulary Test, as well as on the Illinois Test of Psycholinguistic Abilities. The experimental group also showed significantly greater personal social adjustment over the kindergarten control and regular control groups, but the difference was not significant for the distal control group comparison.

A first grade follow-up showed that the at home or control group had increased in IQ on the Peabody Picture Vocabulary Test, while the experimental group and the kindergarten control group showed losses. The authors plans to follow these four groups through the second and third grade and report on results of testing at that time.

Springel, H. A., VandeRiet, V. & VandeRiet, Hani
A Sequential Learning Program for Preschool Children and an Evaluation of the Effectiveness with Culturally Disadvantaged Children.

Population: The subjects were 72 culturally deprived (OEO standards) southern Negro 5-year-olds.

Training Procedures: The sample was divided into three groups, experimental, traditional kindergarten, and an at-home control group. The experimental curriculum stressed developmental tasks that emphasized manipulating, organizing, classifying and ordering things that lead to internalized thought and effective verbal expression.

Assessment Indices: The Stanford-Binet Intelligence Test was administered.

Results: The experimental group's mean IQ rose above the kindergarten group, and the at-home group lost ground.

Strickland, Joan
The Effects of a Parent Education Program.

Population: The study was conducted with 40 children (20 experimental and 20 control) who were enrolled in a kindergarten program designed for underprivileged 5-year-olds. The groups did not differ significantly in respect to age, sex, IQ, parents' formal education, family income, or race.

Training Procedures: The parent education program attempted to influence the parents of this group through two distinct methods: 1) Home visits-- a full-time employed parent instructor visited each mother once a week for 12 weeks. At each conference, the mother was given a five-day "lesson plan" designed to increase the child's language ability. 2) Group sessions--each mother was assigned to a group meeting each week. Group discussions mostly reiterated what the home visitor had discussed previously with the individual participants. (Only seven of twenty mothers attended from one to six meetings.)

Assessment Indices: Both groups were given the Illinois Test of Psycholinguistic Abilities and the Peabody Picture Vocabulary Test before and after the experiment. No other intervention treatment was accorded the control group, beyond that which they received in their kindergarten class.

Results: Although both groups showed gains, the experimental group scored significantly higher than the control group on all aspects of language development. The home visitor rated each mother as to her daily work with the child. Children whose mothers rated high in participation and quality of work showed no significant difference in language development. It should be noted that this result was based on interviews rather than observations and on the use of an unrated testing instrument of 16 items. No relationship was found to exist between the mother's group participation and the child's post-test language development.

The author concluded that lower income parents tend to interact less frequently and in a less language-dependent manner than higher income parents. The child's language development is largely dependent upon parent-child interaction in preschool years, and language disadvantages are a specific and vital factor in overall educational disadvantage.

Strodbeck, G. L.
Progress Report: A Reading Readiness Nursery.

Population: The population consisted of five groups of ten 4-year-old Negro children each.

Training Procedures: The project consisted of a 13-week reading readiness program in which two groups received a more controlled teaching style in which play activities were closely supervised and verbal participation was encouraged.

Results: The children in the structured program showed a mean IQ gain of 4.3 points over the children participating in the traditional program.

Swartz, A. N., Phillips, L. W. & Smith, M. B.
Project REACH, 1965.

The objectives of this program were: 1) To improve attitudes and skills necessary for school, 2) to assess the extent of parent cooperation for such a program, 3) to improve parental attitudes toward school and education, 4) to develop possible methods of teaching which could be adapted later for TV instruction, and 5) to eliminate overall deficiencies normally found in lower-class disadvantaged children.

Population: The subjects were disadvantaged 4-year-olds from a rural New York State area.

Training Procedures: The subjects were divided into three groups, a home-teaching experimental group, a home visitation group (untrained volunteers associated with the children on a regular basis but did not carry out education), and a traditional control group. The two experimental groups received 45-minute sessions once a week for 21 weeks.

Assessment Indices: The Stanford-Binet Intelligence Test and the Peabody Picture Vocabulary Test were administered.

Results: No significant differences were noted among the three groups, although Group 2 consistently scored somewhat higher than the other two groups. The authors feel that the IQ tests given cannot adequately measure skills and knowledge that the program might have taught participating children. However, they feel that this type of program can be useful in gaining cooperation from disadvantaged families. The authors also feel that the program needs to be replicated with more stringent controls.

Tanaka, Masako N.
Classification Skills in First Grade Children: The Effects of Different Instructional Methods.

Population: The subjects included the total first grade population of a lower-class urban school with a policy of heterogenous grouping. Ages ranged from 74 to 84 months. There were 27 males and 25 females, of which 35 were Negro, 14 Caucasian, and three Puerto Rican.

Training Procedures: The entire population participated in periods of object manipulation and picture verbalization with the experimenter. The goal was to increase performance on a test of classification skills. It was felt that the manipulation treatment would be most effective in increasing the test scores at the lower part of the distribution, whereas the verbalization method would be most helpful in increasing the scores of the upper part of the score distribution.

Assessment Indices: The classification test was used as a pre-test and post-test.

Results: The object manipulation treatment increased the scores over the whole distribution, rather than having greater effect on the lower part of the score range. The effect of the picture verbalization treatment resulted in much greater gains for the more able students.

West Virginia Headstart Report

Population: The entire subject group included 16,300 disadvantaged children from families with an annual income of no more than $3,000 for a family of four with $500 increments for each additional member.

Training Procedures: One thousand one hundred seventy-nine professional teachers and county directors worked in 463 child development centers. One thousand seven hundred ninety-eight teacher aides, cooks, janitors, and bus drivers, and 5,800 volunteers were assistants. The programs lasted from six to eight weeks. One hundred thirty-four teachers were trained in the Office of Economic Opportunity's Headstart Orientations at West Virginia University and Marshal University. Aides were college students and/or parents of children enrolled in the program.

A relaxed atmosphere was encouraged, e.g., the children were free to explore and experiment with art media in playing with playdough, finger paint and water tubes. The hope was that children would develop visual discrimination through playing with classroom blocks and increase language ability through speaking practice and role playing.

Assessment Indices: The Metropolitan Reading Readiness Test, the IPAT Culture Free Intelligence Test (Scale 1), the Caldwell Achievement Test, and the Draw-A-Person Test were administered.

Results: Thirteen thousand of 16,300 tests administered were scorable. The Metropolitan Reading Readiness Test and the Culture Free Intelligence Test showed that the West Virginia Headstart children had an average IQ of 104.89, compared to a national average of 100. The report suggests that for most children, causes for the low academic achievement among beginners from low-income levels must be sought elsewhere than in basic intelligence at the age of 5½ to 6.

The results of the Caldwell Scale and the Draw-A-Person Test were not as encouraging as the other two tests. The West Virginia Headstart group scored in the 44th percentile on the Caldwell Achievement Test, with a mean IQ of 86. The Caldwell is intended to measure the degree to which the child has learned various facts about his environment and his ability to maintain information given him, as well as his ability to solve simple problems. The Draw-A-Person Test appears to measure perceptual and motor skill, while underestimating intellectual ability. The report indicates that there was a clear deficit in achievement and intellectual functioning for economically deprived children.

Wohlman, Thelma G.
A Preschool Program for Disadvantaged Children--The New Rochelle Story.

Population: Ten morning and afternoon classes with an enrollment of 150 3½-4½-year-olds from the lower socio-economic classes were set up. Parental involvement was sought through the use of meetings.

Training Procedures: The project curriculum has been geared to the manifest needs of the children in the best possible nursery school traditions, in combination with the basics of the compensatory experience program. The author feels that the pre-kindergarten program should be broadly compensatory in goal rather specifically remedial, and that the instructional program should be derived from the working experience and regular evaluation procedures of each community. The staff included pre-kindergarten teachers, volunteer teacher aides, and part-time social workers. The parent-school program was designed to help the parents support the work of the school in home relationships. Meetings of small informal groups of parents were held. They could visit the classrooms go on field trips, etc.

Results: Teachers and parents saw the children growing and improving in behavior, achievement, attitude, curiosity, and vocabulary development.

The author feels that while the basic goal of education toward a more gratifying school and life achievement can be held in common across all enrichment studies, each project must learn from its own experience just what this means for its particular community.

Ypsilanti Michigan, Preschool Programs.

I. The Perry Preschool Project
Kamii, Constance, Radin, Norma, & Weikart, D. P.

The Perry Preschool Project was developed to assess the longitudinal effects of a two-year program designed to compensate for the mental retardation that is associated with cultural deprivation. The subjects are culturally deprived Negro and white 4-year-old children living in the Ypsilanti Public School District.

The school situation is cognitively oriented with permissive teaching techniques. The children are guided toward increased cognitive development with heavy emphasis on verbal stimulation and interaction, dramatic play, and field trips. The overall technique may be described as "verbal bombardment", in which the teacher maintains a steady stream of questions and comments to draw the child's attention to the critical aspects of his environment.

Parental involvement is an important part of the program with the parent group being divided into two experimental and one control groups.

Preliminary Two-Year Evaluation of the Perry Preschool Project

Population: The subjects are 3- and 4-year-old culturally deprived functionally retarded Negro children. There were three experimental groups: Wave "0" consisted of 13 4-year-olds entered in the fall of 1962. These children spent one year in nursery school, one year in kindergarten, and were in first grade in 1964-65. Wave "1" consisted of ten 3-year-olds entered in the fall of 1962. These children spent two years in nursery school and were in kindergarten in 1964-65. Wave "2" were 13 3-year-olds who entered in 1963 and were in the second nursery school year during 1964-65. Each wave was matched with a control group on the basis of Stanford-Binet IQ and cultural deprivation rating, with an approximate balancing of sex composition and percentage of working mothers for experimental and control groups.

Training Procedures: The early morning period of the preschool program was conducted on an individual basis, with each of the four teachers leading guided learning experiences. The program was cognitively oriented, and although the teachers were permissive, they attempted to guide the children toward increased cognitive development with heavy emphasis on verbal stimulation and interaction. The later morning program consisted of larger group activities. An afternoon home-based program provided individual attention for the child and a chance to involve the mother in the educational process. These home tutorial sessions lasted an hour and a half, and each child was visited at home once a week.

The parents were divided into three separate groups as a means to attempt to find the best way to interest parents in the education program. These groups were: 1) a lecture group, in which parents gathered monthly to listen to speeches by various authorities on child rearing, 2) an active involvement group which engaged in role playing under the direction of a leader, and which was assigned to work at home with the child and to report on such work, and 3) a control group which attended three PTA meetings a year. These group meetings were facilitated through the use of transportation and baby-sitting service in order to maximize parent attendance. Also, the parents are given gifts (books) for attending the lecture and active involvement groups, but this is not done for the control group.

Assessment Indices: Developmental impact was mainly assessed on the basis of change between the fall of 1962, spring of 1963 and spring of 1964 in experimental matching control groups. Tests administered were the Stanford-Binet Intelligence Test, the Leiter International Performance Scale (Arthur Adaptation--nonverbal), the Peabody Picture Vocabulary Test, the Illinois Test of Psycholinguistic Abilities, the Gates Reading Readiness Test, Teacher Rating of Pupil and Parent Behavior, Parental Attitude Research Instrument, records of attendance and need achievement measures.

Results: At the end of the first year the experimental group of Wave "0", as tested on the Stanford-Binet Intelligence Test, gained 12.7 IQ points, while the control group gained 7.2 points. At the end of kindergarten and first grade, the experimental group lost and the control group gained IQ points. At the end of the second grade, experimental and control groups indicated no significant differences on the Stanford-Binet Intelligence Test.

On the Leiter International Performance Scale, no significant differences between Wave "0" and Wave "1" were found in experimental and control groups. However, a dramatic increase was found between the experimental and control groups of Wave "2" (a difference of 6.7 to 36.1).

On the Peabody Picture Vocabulary Test there was no significant difference between the experimental and control groups of Wave "0" in two years. After two years, however, the experimental group of Wave "1" showed a large positive difference over the control group. This was also true for Wave "2" where the experimental group scored significantly higher on the Peabody Picture Vocabulary Test than did the control group at the end of one year.

On the Illinois Test of Psycholinguistic Abilities, the experimental group of Wave "0" scored higher on six of the nine subtests, while the experimental group of Wave "1" scored higher on seven of the nine subtests. The control groups in both waves excelled in the Automatic Sequential area which requires auditory or visual memory and a minimum of conceptualization.

The Gates Reading Readiness Test was administered only to the Wave "0" group and the experimental group scored higher than the control group on all five subtests. The differences were significant at the .05 level on only two of the subtest comparisons. On the Pupil Rating Inventory, only one of the five factors was statistically significant at each grade level. There were academic motivation in kindergarten, socio-emotional state in first grade, and personal behavior in second grade. Except for the teacher dependency factor, all mean ratings favored the experimental group on all factors each year; children who have attended preschool are consistently seen by teachers as being equally or slightly more dependent upon teacher aides than children who have not had preschool.

No significant differences between experimental and control groups were found on the Ypsilanti Rating Scale except in the second grade where the experimental group was higher. High achievers and low achievers both showed gains of 14 points in the first year of preschool; the former maintained and improved their Stanford-Binet Intelligence scores while the lower achievers generally return to their initial level of performance.

The authors see three general patterns as emerging after the first two years of the Perry Preschool Project. First, an overall increased IQ for all groups was indicated. Second, a tendency twoard decreased IQ for control groups who do not have school experience was seen, followed by an immediate gain after one year of school attendance. Third, a dramatic spurt in IQ score after one year of preschool is generally followed by a slight decline during the next year, whether in preschool or regular kindergarten classes.

Significant differences between the experimental and control groups were always obtained at the end of the first year of participation in the project. For the combined waves of the children, experimental groups hold a significant lead over controls after two years of preschool. At the end of kindergarten, the two groups are tending toward a lack of significant differences in IQ scores.

A Two-Year Preschool Program for Disadvantaged Children: Findings from the First Three Years.

Population: The population is the same population as described in the previous study. It should be noted that as the early iterim waves of children are finishing with the program, new waves are initiated.

Training Procedures: In general the same type of training procedures have continued in the Perry Preschool Project. The "verbal bombardment" technique is in use and is highly regarded by the authors.

Assessment Indices: The authors continued to use the assessment indices as indicated in the report after the first two years.

Results: In general, experimental groups continued to score significantly higher on the various tests as administered. The authors state that is appears easier for preschoolers to improve achievement scores than to improve their intelligence test scores. They feel that the area of performance which reveals the greatest improvement as a function of preschool attendance is language skills.

II. A Home Teaching Program for Disadvantaged Preschool Children.

Radin, Norma & Weikart, D.

The objective of this program was to develop a technique of working with deprived parents so that children will benefit to the greatest extent from compensatory preschool programs.

Population: The subjects were all Negro children, described as functionally retarded and culturally deprived. The project was operated for 3½ years, and each year there are 24 children involved, 12 3-year-olds and 12 4-year-olds.

Training Procedures: Each child is enrolled in a half-day morning nursery class. He attends the daily three-hour class and is also visited weekly in the home for 90 minutes. Mothers of these children were involved in core meetings which would take place in the school centers in the evening. There were four certified teachers in the program, each handling nine families. In addition, four part-time aides supervised other children who might be present in the home. The curricula was developed by a curriculum supervisor, but the mothers were also involved in setting up the curriculum. The curriculum consisted of dramatic play, handling of manipulative objects, training of perceptual discrimination, classification and language skills.

Assessment Indices: The Stanford-Binet Intelligence Test (Form L-M), the Peabody Picture Vocabulary Test (Form A), the Weikart Education Attitude Test (which measured the attitude of the mother) and a Cognitive Home Environment Scale were administered.

Results: The reaction of the mothers in 92% of the cases was overwhelmingly favorable toward this program. Researchers saw 33% of the mothers spending an "extensive amount" of time participating in the teaching sessions, both years. The remainder of the sample was seen as spending a "large amount" of time. The Stanford-Binet Intelligence Test scores showed significant difference in gross rate of the experimental and control groups. The experimental groups recorded greater mean scores than controls, but no significant pre-test - post-test comparisons were found. (It should be noted that six members of the control group were lost during the program.) The experimental group obtained a significantly higher adjusted mean score than the control group. The scores on the Peabody Picture Vocabulary Test showed no significant differences between experimental and control groups.

A significant relationship was noted between participation by other children in the home teaching sessions and low gains in IQ by the experimental subjects. The authors feel that the individual needs of each child could not be met in this situation, nor could the child be given the reinforcement necessary to shape behavior. IQ gains were universally, negatively related to the amount of distraction attendent upon the child in the home. The authors noted that one-third of the visits were not completed for various reasons, that illumination was "poor" in 50% of the homes, and that cleanliness, odor, and noise were problems in 15% of the homes. Crowded conditions existed in nearly all the homes.

The authors also noted that a lack of warmth and verbal communication are important determinants of cognitive deprivation.

III. Gale Preschool Program

The Gale Preschool Program is an adaptation of the Perry Preschool Program. The adult-child ratio will be five to one, with ten children to a teacher with assistance of an aide. Home visits will be carried out once every two weeks during a one year program. Parent group discussions will be lead by trained social workers. A more flexible criterion of "deprivation" will be maintained and a diagnosis of mental retardation will not be required for entrance. "Disadvantaged" is defined as a family on welfare with an income of $4,000 or less. Parents should be unskilled, and the family should be recommended by someone who knows the economic status of the family.

Population: Subjects are disadvantaged children residing in the limits of the Ypsilanti Public Schools who will be entering kindergarten in September 1967. Twenty participants were chosen from the 80 eligible children.

Training Procedures: The curriculum is based on the Perry Preschool Project with a strong Piagetian emphasis. Additional curriculum innovations have been added, along with field trips.

Assessment Indices: The Stanford-Binet Intelligence Test and the Peabody Picture Vocabulary Test will be used. The Gates Reading Readiness Test will be administered in the first grade, the Lorge-Thorndike Intelligence Test in the third grade along with the Iowa Test of Basic Skills. The results of the last three will be compared with the results of older siblings who did not attend a year-long preschool.

Results: Results of the program are not yet available. However, it is expected that the subjects will show improved verbal fluency, increased motivation to achieve, improved self-image, increased ability to handle symbols, and an increase in mean IQ.

Ziegler, E. & Butterfield, E.
Motivational Aspects of Changes in IQ Test Performance of Culturally Deprived Nursery School Children.

Population: The subjects were drawn from two nursery schools serving children from lower class homes, and from a housing project in which children from one of the nurseries lived. A non-nursery control group who were not enrolled in the nursery school were also from lower lower-class homes.

Training Procedures: Standard testing procedures underestimate, the authors feel, the culturally deprived child's intelligence, a phenomenon which manifests itself in the initial standard test scores. Increases in standard IQ test scores should be greater for the nursery than the non-nursery school children. A considerable portion of this improvement in standard intelligence test scores is due to changes in the child's motivational structure.

Assessment Indices: A Stanford-Binet Intelligence Test (Form L-M) was administered four times to all subjects. A picture vocabulary item was presented first in order to allow some degree of initial success.

Results: The children who attended nursery school increased significantly more in their IQ scores from the beginning to the end of the nursery school year than did the children who did not attend nursery school. The authors feel that the study suggests that the deprived child's general level of competence should not be equated with his level of cognitive abilities.

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III. The Intellectual Abilities of Rural Appalachian Children: The Pilot Assessment

The present survey has had a number of related objectives. We have emphasized the overriding importance of a curriculum based intimately and directly upon the best possible estimate of the rural Appalachian child's developmental status. Thus each aspect of a viable curriculum for the proposed population rests upon the acknowledged strengths, weaknesses, and behavioral potentialities of the curriculum consumer, the rural disadvantaged child. In this regard the preceding literature survey has revealed a noticeable lack of information regarding the intellectual capacities of the children in the Appalachian region. Accordingly, much of our effort has been directed toward the present pilot assessment.

In investigating the general cognitive-intellectual capacities and the socio-emotional status of the Appalachian child in addition to the demographic-ecological conditions relative to the regions involved, a number of specific objectives were held in view. These objectives were as follows: (1) An examination of differential performance of the children at all age levels across the various tasks included in the pilot test battery. It is anticipated that the modal developmental profile will show differing strong points and weaknesses depending upon the particular cognitive or psychological capacity in question, e.g., it may well be that verbal skills are notably inferior to perceptual-motor abilities. (2) A comparison of the present sample to their middle class counterparts either here in the West Virginia area or in other regions of the country where the same psychological tests have been given to approximately the same age ranges. In addition the performance of the present subjects on certain tasks such as the Illinois Test of Psycholinguistic Abilities will be compared to other socio-culturally disadvantaged subject groups. (3) An examination of the possible significant age-related differences for any one or all of the tasks included across the present age range--three, four, five, and six years of age. (4) An assessment of the possible distinctions within the present subject sample such as male-female differences, the relationship of the child's performance to the mother interview-questionnaire, and the possible underlying relationships of the socio-emotional information derived from the cognitive style measures to the child's intellectual task performance. (5) The present results will be utilized as a type of basal information source for each of the ages involved to generate curriculum emphases, goals, and related teaching strategies.

General characteristics of the subject sample: A total of 160 children drawn equally from Monongalia and Upshur Counties of West Virginia were tested. Equal numbers of males and females were included across the age range three to six years. Thus, the final sample consisted of twenty 3½-, twenty 4½-, twenty 5½-, and twenty 6½-year-old children. All the mothers of the children involved were given a demographic child-rearing practices interview-questionnaire. The questionnaire included material designed to assess the general ecological and demographic information specific to the county in question, the environmental background conditions of the children involved, the parents' academic aspirations for their children, and a series of child rearing scales and inventories. (Note: A copy of the interview-questionnaire may be found in Appendix A.)

The parent interview-questionnaire summary tables are presented in Appendix B of the present report. These tables permit a number of important generalizations. In general, the present sample may be characterized as upper-lower - lower-middle class. 98 percent of the families interviewed in Monongalia County came from villages or small towns. This may be compared to the Upshur County subsample where approximately 31 percent lived on farms and 20 percent came from the city of Buckhannon (1960 population of 6,386). The large majority of cases in both counties were intact married families. With regard to race, 100 percent of the Upshur County subsample were Caucasian while 72.2 percent of the Monongalia County subsample was Caucasian and 27.8 percent Negro.

In general the present subject sample can be considered nonmobile. This is clearly indicated in Tables 6, 8, 11, and 13 in Appendix B. 70.2 percent of the mothers and 78.9 percent of the fathers indicated their place of birth as a rural region within the state of West Virginia, or the same county, or the same community in which they presently were residing. Similarly, 85.4 percent of the mothers and 67.2 percent of the fathers completed the majority of their formal schooling within these same geographical confines.

The average educational level of the fathers in the present subject sample is given in Table 12 of Appendix B. 38.6 percent of the Upshur subsample and 20.4 percent of the Monongalia County subsample fathers had completed eight grades of formal schooling or less. 38.6 percent of the Upshur County fathers and 50 percent of the Monongalia County fathers had completed high school. Regarding the fathers' occupation, approximately 40 percent of the respondents in each county fell in the semi-skilled category and approximately 12 percent in the unskilled classification. The categories of skilled, white collar, semi-professional, professional, managerial and proprietor made up only approximately 14 percent of the present sample for each county. 35 to 40 percent of the families in the two counties had incomes from $2,000 to $3,999. 50 percent of the Monongalia County subsample had incomes under $2,000. In contrast 46 percent of the Upshur County families had annual incomes between $4,000 and $9,000. 56.1 percent of the families of Upshur County and 63 percent of the families in Monongalia County owned or were purchasing their homes. 29.8 percent of the Upshur County subsample and 25.8 percent of the Monongalia County subsample were renting their homes.

Considering the total number of persons living in the home, 24.5 percent of the Upshur County subsample reported three to four people, 36.9 percent reported five to six people, and 26.3 percent reported seven to eight people residing in the family dwelling. The percentage values for these categories in Monongalia County were 25.9 percent, 37 percent and 27.7 percent respectively. The index of the ratio of rooms to people in the home indicated that over 70 percent of each county subsample had one room for every two persons in the family. The total number of children in the sample families varied considerably. 49.1 percent of the Upshur families and 64.7 percent of the Monongalia families had from one to three children. 40.3 percent of the Upshur families and 27.8 percent of the Monongalia families had from four to six children. 8.8 percent of the Upshur County subsample and 7.5 percent of the Monongalia County subsample had six children or more in the family. The parents' academic aspirations for their children, the mothers' rankings of a series of attitude-belief statements, the frequency of medical and dental services directed toward the children, and the general environmental background-conditions of the children in the present sample are presented in the remaining tables of Appendix B.

The Assessment Indices: The intellectual assessment survey was divided into two parts; one-half of the children received Battery A and the remaining subjects received Battery B. Battery A consisted of the following: (1) The Peabody Picture Vocabulary Test, (2) The Stanford-Binet Intelligence Test--Form L-M, (3) Kagan's Matching From Familiar Figures Cognitive Style

Task, and (4) Kagan's Draw-A-Line Motor Inhibition Task. Battery B consisted of the following: (1) The Peabody Picture Vocabulary Test, (2) The Illinois Test of Psycholinguistic Abilities, (3) The Frostig Developmental Test of Visual Perception, and (4) a verbal Doll Play session (the analysis of which will not be included in the present summary). In addition, the 5½- and 6½-year-old children in both battery subsets received a series of Piagetian tasks designed to assess conservation of number, conservation of discontinuous quantity (identity and equivalence formats), unidimensional seriation, serial correspondence, multiple seriation, and multiple classification skills.

The Piagetian task formats consisted of the following:

1. Number Conservation: The subject was presented with two sets of twelve poker chips of two contrasting colors. The test administrator and subject arranged the two groups of colored chips in one-to-one correspondence, and the subject agreed that there was the same number of blue chips and yellow chips. Following the equality agreement one line of chips was compressed together. The subject was asked, "Are there the same number of yellow chips and blue chips . . . or . . . does one have more chips?" The subject was then asked to explain and justify his response.

This general procedure was repeated for two additional trials in which one of the groups of colored chips were (a) scattered on the table and (b) extended on the table. Each trial involved differenct colored chips and a one-to-one correspondence was established prior to the equality agreement between administrator and subject for each trial. The positions of the criterial phrases "same number of chips", and "more chips" were altered from trial to trial. Finally, an empirical check was carried out in which a single chip was removed from one of the arrays and the subject was asked if there were the same number of poker chips in the two groups. On all of the experimental trials the subject carried out the appropriate transformations under the administrator's direction.

2. Conservation of Discontinuous Quantity (These tasks were adapted from Hooper, 1967.)

a. Identity Conservation: This task involved dried household barley dyed various colors, a 50 ml. laboratory beaker (height 2" and diameter 1 3/4"), and a 50 ml. graduate cylinder (height 8" and diameter 3/4"). Following an orientation session in which the criterial phrases "same amount" and "more seeds" were either spontaneously given by the subject or explained to him, the three test trials were administered. Each test trial involved different colored barley seeds.

For each test trial the subject initially filled the standard container and then transferred the barley seeds to the comparison graduate cylinder. He was then asked, "Does this glass have the same amount of seeds or more seeds than this glass had before?" Following the objective response the subject was asked to explain and justify his conclusion. The positions of the criterial phrases "same amount" and "more seeds" were altered across trials. At the conclusion of the three test trials an empirical check was administered. A small amount of seeds was taken from the comparison container and the subject was asked, "Does this glass (gesture toward comparison container) have more seeds or the same amount of seeds (gesture toward standard container) that this glass had before?"

b. Equivalence Conservation: This task used similar materials to the identity case described above with the addition of a second 50 ml. beaker. In the Equivalence task the subject filled two standard containers with equal amounts of seeds, transferred the contents of one of the containers to the comparison graduate cylinder, and was asked, "Does this glass (gesture toward the comparison container) have the same amount of seeds or more seeds than this glass (gesture toward standard container) has?" Three test trials using different colored seeds and an empirical check were administered.

3. Seriation and Serial Correspondence (Adapted from Coxford, 1964): In the initial phase of this task the subject arranged a series of cardboard "sticks" and cardboard circles or "balloons" in order of increasing size. (Unidimensional seriation). The arrays of sticks and balloons were then placed in one-to-one serial correspondence. The serial correspondence test trials consisted of (1) extending, (2) compressing, and (3) scrambling the stick array. In each test case the administrator pointed to one of the sticks and said, "What balloon goes with this stick?" Each test trial consisted of five stick-balloon matching instances.

4. Multiple Seriation: This task requires that the subject fill in one empty cell on a strip of four cells with a picture that included both values of two continuous dimensions from which the strip is constructed. For example, a series of leaves were presented with the top leaf being large and light green, and the following leaves decreasing in size and increasing in darkness ending in a small dark leaf. The subject selects a leaf from four choices: one leaf is a duplicate leaf adjacent to the empty cell in the strip, one is correct on both values, and two leaves have only one correct value (i.e., correct on size and incorrect on shade, or the reverse). The position of choices was randomized across strip choice sheets.

A total of four strips were constructed from the same combination of dimensions as the classification matrices. The dimensions for the strips were continuous, however (such as shades of green) as compared to discontinuous in the classification matrices (color represented by green vs. yellow). The definitions of the continuous dimensions and values are presented below.

The four strips and choice sheets were presented by the administrator in a separate notebook one at a time in the following order: color-size (leaves) as the practice item; orientation-emptiness (bottles); number-color (tulips); and size-border (houses).

5. Multiple Classification: This task requires that the subject fill in one empty cell of a four cell matrix (i.e., a 2-x-2 matrix) with a picture that includes both subclass attributes relevant to the matrix. For example, in a color (green-yellow) and size (big-little) matrix, a large yellow clock, a small yellow clock, and a large green clock were presented in a matrix; the correct picture for completion would be a small green clock. Subject selected a clock from four choices; two clocks were duplicates of cells adjacent to the empty cell, one clock had irrelevant attributes, and one clock was correct. A total of four matrices were constructed from the following combinations of dimensions: color-size, orientation-emptiness, color-number, and border-size. The definitions of each dimension are presented below. The position of the correct choice was randomized across matrix sheets. The four matrices and choice sheets were presented by the administrator in a notebook one at a time in the following order: color-size matrix (clocks) served as a practice task to insure subject's understanding of the requirements of the task; orientation-emptiness (pitchers); number-color (apples) and size-border (trees). (Shantz and Sigel, 1967, pp. 11-13.)

Definitions of Dimensions
on Classification and Seriation Tasks

Dimensions	Symbol	Classification	Seriation
Color	C	Yellow vs. green Red vs. green	Four values: Light green to dark green Light red to dark red
Size	S	Big vs. little	Four values: Big to little
Orientation	O	Up vs. tilted	Four values: 0° (up) 45° (upward tilt) 135° (downward tilt) 180° (upside down)
Number	N	2 vs. 3	1, 2, 3, 4
Border	B	Entirely bordered vs. no border	1/4 bordered 1/2 bordered 3/4 bordered totally bordered
Emptiness	E	Full vs. 1/4 full	Full 3/4 full 1/2 full 1/4 full

Task Scoring: The same scoring criteria was applied to all conservation task settings. In order to pass a given trial the subject had to make an equality judgment, e.g., the "same amount of seeds", and support this estimate with an adequate explanation. Adequate explanations included the following: (a) references to the previous equal amounts of seeds or equal numbers of poker chips, (b) identity statements which referred to the "sameness" of the sets of the poker chips before and after transformation, (c) reversibility, e.g., "You could pour the seeds back into the first glass and they would have the same amount.", (d) addition-subtraction statements, and (e) compensatory relations-proportionality statements, e.g., "This glass is short and fat but that glass is tall and skinny so they have the same amount of seeds."

Subjects who passed two or three trials were scored as conservers. Similarly, subjects who passed two or three trials on the Multiple Seriation and Multiple Classification tasks were scored as passing. The theoretical score range for the unidimensional seriation task was 0-20. Subjects who scored 14-20 were classified as passing. The theoretical score range for serial correspondence was 0-10, and subjects scoring 7-10 were classified as passing.

All of the various tests were individually administered in two sessions within the subject's home setting.

General Results: Initial comparison of the Upshur and Monongalia subsample score patterns indicated a lack of significant differences across the test batteries. Accordingly, the two county subsamples are combined in the following analysis.

1. The Peabody Picture Vocabulary Test: Table 1 presents the raw score and IQ score means and standard deviations for the Peabody Picture Vocabulary Test. As indicated above the Peabody Picture Vocabulary Test was administered to all the subjects in the present sample. Male performances exceed those of their female counterparts on every comparison except the 3½-year raw score values. These results are surprising in view of the traditional superiority accorded females subjects insofar as verbal skills are concerned. The IQ scores derived from the Peabody Picture Vocabulary Test are below the national average at every age level tested in the present sample. This relative deficit is especially true of the female subjects. Considering the raw score means, there is a significant age progression across each of the comparisons 3½ to 4½, 4½ to 5½, and 5½ to 6½ years of age except for the female subsample in the latter comparison interval.

TABLE 1

PEABODY PICTURE VOCABULARY TEST RAW SCORE AND IQ MEANS AND STANDARD DEVIATIONS

Age--Subsample Groups	Raw Score		IQ Score	
	Means	S. D.	Means	S. D.
3 1/2 years				
Males (N = 20)	29.55	9.124	90.75	15.440
Females (N = 20)	30.25	10.454	88.10	12.349
4 1/2 years				
Males (N = 20)	42.90	7.099	94.30	13.774
Females (N = 20)	39.55	11.115	88.60	18.249
5 1/2 years				
Males (N = 20)	51.10	11.908	95.70	21.900
Females (N = 19)	46.90	10.119	92.26	16.934
6 1/2 years				
Males (N = 20)	55.35*	5.712	94.05	10.707
Females (N = 18)	48.05	11.373	87.00	18.095

AGE COMPARISONS (RAW SCORE MEANS)

	t Value	Probability Level
3 1/2 - 4 1/2		
Males	5.034	<.005
Females	2.657	<.025
4 1/2 - 5 1/2		
Males	2.579	<.025
Females	2.132	<.025
5 1/2 - 6 1/2		
Males	1.043	.10<>.05
Females	.329	N. S.

*Male/Female difference is significant for the 6 1/2 year level, e.g., $t = 2.5004$, $p = <.025$.

2. The Stanford-Binet Intelligence Test: In general the results of the Stanford-Binet Intelligence Test, as reported in Table 2, are encouraging. All the age subgroup means are within the 90-100 "normality" score range associated with the standardization samples. In addition, the within group variances were not significantly different from the national norms. Male subjects performed somewhat better than females at each age level except 3½ years.

Additional information may be derived from the Stanford-Binet test results by comparing the differential successes of the present subjects on verbal as compared to performance-type items. In every comparison across the present age range for both males and females, the children were more likely to successfully pass performance-type items than those of a verbal nature. This pattern is especially notable for the 4½-year-old males where 77 percent of the performance items were successfully completed compared to 38.5 percent of the verbal items. Similarly, the 5½-year-old female subsample passed 67.3 percent of the performance items that they attempted versus 42.3 percent of the verbal items. Considering the total sample, 63.5 percent of the performance-type tasks were passed compared to 53 percent of the verbal items. For each age range tested in the present sample the Stanford-Binet IQ means exceed those derived from the Peabody Picture Vocabulary Test. This result is apparently due to the presence of performance-type items on the former intellectual measure.

3. Frostig Developmental Test of Visual Perception: The Frostig Test consists of five subsets and a scaled perceptual quotient which has a national norm of 100 with a standard deviation of 15. The five subtests are described as (1) eye-motor coordination, (2) figure-ground, (3) form-constancy, (4) position in space, and (5) spatial relations. As Tables 3 and 4 indicate the

TABLE 2

STANFORD-BINET IQ SCORE AND MENTAL AGE

MEANS AND STANDARD DEVIATIONS

Age - Subsample Group (N = 10 in all cases)	Means	Standard Deviations	Means	Standard Deviations
3 1/2 years				
Males	97.7	15.773	40.70	7.322
Females	101.2	10.583	43.10	4.30
4 1/2 years				
Males	106.1	18.737	58.0	11.722
Females	98.2	21.250	54.60	21.250
5 1/2 years				
Males	105.1	22.867	68.10	14.053
Females	105.0	18.210	67.0	13.394
6 1/2 years				
Males	103.1*	12.004	80.80	10.323
Females	91.9	15.890	71.70	12.050

*Male/Female difference approaches significance, e.g., $t = 1.6873$, $p = .10 <> .05$.

present subjects' performances on the various Frostig subtests reveals a mixed picture. Performance on the position in space and spatial relations tasks is relatively adequate. The eye-motor coordination task appears to be of intermediate difficulty. In contrast, performance on the figure-ground and form-constancy tasks is notably weak at all age levels except 6½ years. These tasks have been cited by the test designer as particularly salient for the diagnosis of deficiencies relevant to reading-readiness skills. Considering the overall perceptual quotient scores, 40 percent (3½ years), 80 percent (4½ years), 50 percent (5½ years), and 50 percent (6½ years) of the respective age groups included in the present sample have perceptual quotients below 90, the cut off point generally accepted as indicative of later reading difficulties. As Table 4 indicates 60 percent of the age comparisons for the Frostig subtests are significant. The most notable performance break occurs across the interval 5½ to 6½ years of age. The relatively improved performance of these 6½-year-old subjects may well be due to a greater familiarity and an increased ability to deal with paper and pencil task situations. There was a slight female performance superiority uniformily for the 3½ and 4½ age levels. In contrast, male performances were superior for the 5½ and the 6½ year subsample comparisons.

4. The Illinois Test of Psycholinguistic Abilities: The Illinois Test of Psycholinguistic Abilities consists of nine theoretically distinct subtests. (1) The Auditory Vocal Automatic Test measures how well the child has mastered the elementary grammatical and syntactical construction of language. (2) The Visual Decoding Test measures how well a child can understand what he sees. This test stresses the ability to comprehend perceptual identity via pictures in a matching from sample format. (3) The Motor Encoding Test assesses how well the child can express himself with gestures or on a

TABLE 3

FROSTIG DEVELOPMENTAL TEST OF VISUAL PERCEPTUAL MEANS

AND STANDARD DEVIATIONS FOR THE FIVE SUBTESTS AND THE PERCEPTION QUOTIENT

Age--Subsample Groups	Subtest 1		Subtest 2		Subtest 3		Subtest 4		Subtest 5		P. Q.	
	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.
3 1/2 years	(3.0)		(3.0)		(2.0)		(1.3)		(0.0)			
Males	1.89	.233	.80	1.400	.50	.922	1.90	1.044	.10	.300	89.30	9.166
Females	2.50	1.628	.90	1.466	.70	1.487	2.40	.917	.30	.458	93.40	7.046
4 1/2 years	(7.0)		(7.50)		(4.0)		(2.7)		(.60)			
Males	3.60	2.154	.80	1.166	.90	1.044	2.60	1.281	.10	.300	78.50	7.978
Females	4.20	2.040	2.70	4.100	2.90*	2.663	2.20	1.007	.40	.490	88.40*	13.463
5 1/2 years	(10.2)		(14.0)		(6.0)		(5.1)		(3.0)			
Males	6.60	1.625	7.90**	5.612	5.22	3.258**	3.56	1.166	1.90	1.640	88.70	12.370
Females	6.50	2.540	3.00	3.950	2.50	2.460	3.50	1.432	1.30	1.487	83.90	15.757
6 1/2 years	(13.2)		(17.0)		(8.7)		(6.2)		(5.2)			
Males	12.70	5.569	12.40	5.333	5.70	3.068	5.90	1.375	5.30	1.616	93.20	13.819
Females	10.00	4.604	9.10	7.993	4.60	2.332	5.10	1.814	3.60	2.245	89.90	17.863

Subtest 1--Eye-Motor Coordination
Subtest 2--Figure-Ground
Subtest 3--Form Constancy
Subtest 4--Position in Space
Subtest 5--Spatial Relations

NOTES: N = 10 in all cases.
The values in parentheses immediately preceeding each age-subsample are the standardization sample means for the respective subtests.

*Indicates female performance superiority at the .10 level.
**Indicates male performance superiority at the .10 level.

TABLE 4

AGE COMPARISONS FOR THE FROSTIG DEVELOPMENTAL TEST OF VISUAL PERCEPTION

Comparison Groups	Subtest 1		Subtest 2		Subtest 3		Subtest 4		Subtest 5	
	t Value	Prob.	t Value	Prob.	t Value	Prob.	t Value	Prob.	t Value	Prob.
3 1/2 - 4 1/2										
Males	1.789	<.05	--	--	.862	N. S.	1.271	N. S.	--	--
Females	1.954	<.05	1.242	N. S.	2.164	<.05	.424	N. S.	.448	N. S.
4 1/2 - 5 1/2										
Males	3.336	<.005	3.835*	<.005	3.788	<.005	1.767	<.05	2.816	<.01
Females	2.118	<.025	.158	N. S.	.331	N. S.	2.177	<.025	.660	N. S.
5 1/2 - 6 1/2										
Males	3.155	<.005	1.774	<.05	.595	N. S.	3.900	<.005	4.814	<.005
Females	1.997	<.05	2.053	<.05	1.858	<.05	2.077	<.05	1.548	N. S.

PERCENTAGE OF CHILDREN WITH PERCEPTUAL QUOTIENT 90 OR BELOW

Age Range	Total % (N = 20)	Males % (N = 10)	Females % (N = 10)
3 1/2	40%	50%	30%
4 1/2	80%	90%	70%
5 1/2	50%	30%	70%
6 1/2	50%	50%	50%

NOTE: Probability levels are for one-tailed significance tests.

*Variance homogenity assumptions not satisfied.

sensory-motor basis. (4) The Auditory Vocal Association Test determines how well the child can relate elements of spoken language and respond vocally with the appropriate answer. This test takes the form of verbal analogies. (5) The Visual-Motor Sequential Test measures the child's sequential visual memory. (6) The Vocal Encoding Test determines how well the child can express himself vocally regarding objects which he sees and holds. (7) The Auditory Vocal Sequential Test assess the child's auditory memory for a series of spoken digits. (8) The Visual Motor Association Test taps the child's ability to relate symbols presented through visual channels. The child is asked to relate visual symbols in a meaningful way in a classification-matching format. (9) The Auditory Decoding Test assesses how well the child understands spoken language.

Although each of the above subtests are theoretically independent, it is possible to group various subtests together for conceptual analysis. Thus, six of the tasks are auditory or vocal in nature while three emphasize visual or motor skills. The decoding tests, the encoding tests, and the association tests are intended to assess processes at the representational level. The remaining automatic subtests deal with the nonmeaningful use of symbols generally stressing the long-term retention and the short-term memory of symbol sequences. The auditory vocal automatic subtest is a straightforward assessment of grammatical inflection ability. The normative results and the various comparisons concerning the Illinois Test of Psycholinguistic Abilities are presented in Tables 5, 6, 7, 8, and 9.

The age comparisons presented in Table 6 indicate that the 3½ subsample performs exceptionally well. Only the auditory vocal association subtask reveals a clear cut age progression from 3½ to 4½ years of age.

TABLE 5

ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

MEANS AND STANDARD DEVIATIONS

Age--Subsample Groups	Auditory Vocal Automatic		Visual Decoding		Motor Encoding		Auditory Vocal Association		Visual Motor Sequencing	
	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.
3 1/2 years										
Males	4.10	1.758	6.4	1.497	7.0	4.405	5.1	2.427	3.1	1.728
Females	4.20	1.4	7.1	2.70	7.0	3.847	6.8	3.628	5.4	4.883
Total	4.15	1.59	6.75	2.211	7.0	4.135	5.95	3.028	4.25	3.306
4 1/2 years										
Males	4.4	1.744	5.7	2.492	5.8	2.821	7.9	2.119	4.0	4.025
Females	5.1	2.548	8.3**	4.291	8.6**	4.432	10.9**	2.625	6.1	3.9611
Total	4.75	2.211	7.0	3.742	7.2	3.970	9.4	2.818	5.05	4.129
5 1/2 years										
Males	8.5	3.324	12.6*	1.908	12.3*	2.830	13.7	3.822	11.8*	6.030
Females	7.6	2.289	9.2	2.936	8.8	2.561	11.6	4.862	7.8	2.960
Total	8.05	2.889	10.9	2.931	10.55	3.217	12.65	4.497	9.8	5.134
6 1/2 years										
Males	10.4*	3.105	13.2*	3.187	12.9	4.721	18.0*	4.074	13.1	6.007
Females	8.0	3.033	10.8	4.331	10.4	6.651	13.9	4.969	10.7	4.076
Total	9.2	3.295	12.0	3.987	11.65	5.901	15.95	4.985	11.9	5.272

TABLE 5 (Continued)

Age--Subsample Groups	Vocal Encoding		Auditory Vocal Sequencing		Visual Motor Association		Auditory Decoding		Total	
	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.
3 1/2 years										
Males	5.6	2.166	12.9	4.989	6.9	3.961	7.2	5.593	59.8	15.381
Females	6.2	2.529	11.5	3.775	7.7	4.314	12.9**	5.540	67.7	18.050
Total	5.9	2.278	12.2	4.479	7.3	4.161	10.7	6.451	63.75	17.228
4 1/2 years										
Males	5.9	2.982	13.6	8.368	6.0	4.405	11.7	6.512	62.6	20.397
Females	8.0	3.376	16.2	8.109	8.6	6.248	14.9	8.117	86.7**	28.890
Total	6.95	3.354	14.7	8.198	7.3	5.560	13.3	7.531	74.65	27.758
5 1/2 years										
Males	11.6*	2.289	17.0	7.169	12.5*	3.170	16.3	4.267	116.3*	22.235
Females	7.2	2.713	17.5	4.863	9.4	5.083	15.5	8.176	93.6	19.356
Total	9.4	3.338	17.25	6.131	10.95	4.511	15.9	6.534	104.95	23.735
6 1/2 years										
Males	12.2	3.919	25.4*	6.422	15.7*	2.532	19.4	7.526	140.3*	28.883
Females	10.2	5.154	19.1	8.055	11.7	6.587	19.5	7.406	113.6	40.140
Total	11.2	4.686	22.25	7.936	13.35	5.561	19.45	7.466	126.95	37.429

NOTE: N = 10 for each male/female subsample.

*Significant sex comparison--Male superiority (Prob. of .10)
**Significant sex comparison--Female superiority (Prob. of .10)

TABLE 6

SIGNIFICANT AGE COMPARISONS FOR THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

3 1/2 - 4 1/2 Year Comparison

	t Value	Prob.
Auditory Vocal Association		
Males	2.605	<.01
Females	2.748	<.01
Total	3.526	<.005
Auditory Vocal Sequencing		
Females	1.577	.10<>.05
Auditory Decoding		
Males	1.573	.10<>.05
Total Score		
Females	1.673	.10<>.05

4 1/2 - 5 1/2 Year Comparison

	t Value	Prob.
Auditory Vocal Automatic		
Males	3.282	<.005
Females	2.189	<.025
Total	3.954	<.005
Visual Decoding		
Males	6.597	<.005
Total	3.579	<.005
Motor Encoding		
Males	4.100	<.005
Total	2.857	<.005
Auditory Vocal Association		
Males	3.983	<.005
Total	2.668	<.025
Visual Motor Sequencing		
Males	3.243	<.005
Total	3.137	<.005
Vocal Encoding		
Males	4.551	<.005
Total	2.258	<.005
Visual Motor Association		
Males	3.596	<.005
Total	2.223	<.025
Auditory Decoding		
Males	1.773	<.05
Total Score		
Males	5.338	<.005
Total	3.617	<.005

5 1/2 - 6 1/2 Year Comparison

	t Value	Prob.
Auditory Vocal Association		
Males	2.311	<.025
Total	2.146	<.025
Visual Motor Sequencing		
Females	1.726	<.05
Vocal Encoding		
Females	1.547	.10<>.05
Auditory Vocal Sequencing		
Males	2.619	<.01
Total	2.173	<.025
Visual Motor Association		
Males	2.367	<.025
Total Score		
Males	1.975	<.05
Females	1.346	.10<>.05
Total	2.164	<.025

NOTE: Probability levels are for 1-tailed significance tests.

In contrast a major break appears between the 4½- and 5½-year-old subsamples, i.e., all the subtask comparisons except auditory vocal sequencing are significant for the male subjects. In general, the age progression is most notable for the male subsample. The total raw score comparisons for the total sample are significant at the 4½ to 5½ and the 5½ to 6½ year intervals.

Table 7 presents the comparisons between the Appalachian pilot sample and the standardization sample norms as reported in McCarthy and Kirk, 1963. The 3½-year subsample shows no significant differences from the national sample. On 30 percent of the comparisons they exceed the standardization norms. This may be compared to the performances of the 5½- and 6½-year-old subjects which show some significant differences on every subtask except auditory vocal sequencing and visual encoding. In general the present subjects performances on the auditory vocal sequential, the auditory decoding, and the visual decoding tests are adequate. The two association subtasks appear to be of intermediate difficulty although the male subjects do quite well on these tasks. Subject performances on the encoding tasks, the visual motor sequential task, and the auditory vocal automatic task reveal the greatest overall deficits as compared to the standardization norms. Overall, decoding performance is superior to encoding ability. The present subjects memory ability does not appear to be impaired. The motor encoding, vocal encoding, and the auditory vocal automatic subtasks, in particular, demonstrate an increased decrement as the children get older.

In addition to the standardization sample mentioned above it is possible to compare the present results with a number of similar studies which have administered the Illinois Test of Psycholinguistic Abilities to disadvantaged subject populations, e.g., Karnes, Studley, Wright, and Hodgins, 1968; Leventhal and Stedman, 1967; and Weaver, 1963. Table 8 represents a comparison of the 4½-year-old subsample from the present subject population

TABLE 7

COMPARISONS BETWEEN THE PILOT SAMPLE AND THE STANDARDIZATION SAMPLE ON THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

	Auditory Vocal Automatic		Visual Decoding		Motor Encoding		Auditory Vocal Association		Visual Motor Sequencing	
	t Value	Prob.	t Value	Prob.	t Value	Prob.	t Value	Prob.	t Value	Prob.
3 1/2 years										
Males	.465	N. S.	.710	N. S.	1.165	N. S.	1.929	<.1	1.065	N. S.
Females	1.476	N. S.	1.866	N. S.	.614	N. S.	.355	N. S.	.368	N. S.
Total	1.195	N. S.	1.735	<.1	1.251	N. S.	1.557	N. S.	.458	N. S.
4 1/2 years										
Males	3.126	<.01	3.309	<.01	5.171	<.01	2.903	<.01	4.349	<.01
Females	1.951	<.1	.812	N. S.	1.282	N. S.	.403	N. S.	1.113	N. S.
Total	3.701	<.01	1.019	N. S.	4.291	<.01	1.372	N. S.	3.397	<.01
5 1/2 years										
Males	2.994	<.01	.258	N. S.	1.455	N. S.	1.515	N. S.	.344	N. S.
Females	3.261	<.01	2.785	<.01	2.084	<.05	3.024	<.01	4.149	<.01
Total	4.551	<.01	1.351	N. S.	2.362	<.05	3.321	<.01	2.656	<.02
6 1/2 years										
Males	2.902	<.1	.238	N. S.	2.085	<.05	.660	N. S.	1.853	<.10
Females	5.095	<.01	1.372	N. S.	2.129	<.05	3.502	<.01	3.398	<.01
Total	5.490	<.01	1.227	N. S.	2.984	<.01	3.073	<.01	3.458	<.01

TABLE 7 (Continued)

	Vocal Encoding		Auditory Vocal Sequencing		Visual Motor Association		Auditory Decoding		Total	
	t Value	Prob.	t Value	Prob.	t Value	Prob.	t Value	Prob.	t Value	Prob.
3 1/2 years										
Males	.535	N. S.	1.047	N. S.	.604	N. S.	.517	N. S.	.194	N. S.
Females	1.296	N. S.	.266	N. S.	.731	N. S.	.840	N. S.	.184	N. S.
Total	1.285	N. S.	.619	N. S.	.082	N. S.	1.049	N. S.	.268	N. S.
4 1/2 years										
Males	3.725	<.01	.765	N. S.	2.141	<.05	1.718	<.10	5.624	<.01
Females	1.361	N. S.	.137	N. S.	.664	N. S.	.477	N. S.	.539	N. S.
Total	3.569	<.01	.391	N. S.	1.965	<.05	.657	N. S.	3.514	<.01
5 1/2 years										
Males	2.730	<.01	1.090	N. S.	.409	N. S.	1.392	N. S.	2.196	<.05
Females	3.937	<.01	1.160	N. S.	2.638	<.02	1.568	N. S.	4.638	<.01
Total	4.596	<.01	1.519	N. S.	2.256	<.05	2.155	<.05	4.682	<.01
6 1/2 years										
Males	1.707	<.10	1.158	N. S.	.676	N. S.	2.135	<.05	2.248	<.05
Females	3.695	<.01	2.233	<.05	2.773	<.01	2.053	<.05	4.298	<.01
Total	3.915	<.01	.858	N. S.	2.641	<.01	3.033	<.01	4.643	<.01

NOTES: Underlined values indicate pilot sample superiority.
Probability levels are for 2-tailed significance tests.
The pilot sample has 10 males and 10 females at each of the age-subsamples. The standardization sample has 25 males and 25 females in each of the age subsamples.

with a group of disadvantaged Negro children of the same age range from Detroit, Michigan. The average performance of these groups is quite similar although the Appalachian pilot sample scored significantly higher on the visual decoding task as compared to the inner-city Negro group ($t = 2.0981$, p .05). In contrast to the Detroit results (Sigel and Perry, 1966), the within sample variances of the present Appalachian sample did not differ significantly from the standardization sample variance values.

Table 9 presents a similar comparison between the present 6½-year subsample and a group of disadvantaged children from Durham, North Carolina (Leventhal and Stedman, 1967). Although the present pilot male subjects are superior to the Durham male children on the auditory vocal sequential test ($t = 3.2309$, $p. < .01$) and the Durham female subsample is superior to the present subsample girls on the vocal encoding task ($t = 2.1069$, $p. < .05$), the average score patterns are quite similar for these two subject samples. Comparisons of the present 6½-year-old subsample and the Durham subsample to the standardization norms on the Illinois Test of Psycholinguistic Abilities reveal a similar pattern of deficits. Neither of the two subject groups differ from the standardization sample on the visual decoding task. Significant differences favoring the standardization sample are found for the auditory vocal automatic, the motor encoding, the visual motor sequential, and the auditory decoding tasks, respectively.

This relatively small group of research studies which have administered the Illinois Test of Psycholinguistic Abilities to disadvantaged subject populations permits certain generalizations. The results of the present study in congruence with results previously reported by Sigel and Perry, 1966; Karnes, et. al, 1968; and Weaver, 1963; indicates relatively adequate performances on the auditory vocal sequential and the auditory decoding tasks.

TABLE 8

ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES COMPARISON 4 1/2 YEAR OLDS--APPALACHIAN PILOT SAMPLE AND DETROIT, MICHIGAN, SAMPLE

	Auditory Vocal Automatic	Visual Decoding	Motor Encoding	Auditory Vocal Association	Visual Motor Sequencing	Vocal Encoding	Auditory Vocal Sequencing	Visual Motor Association	Auditory Decoding	Total
West Virginia Sample										
Means	4.75	7.0	7.2	9.4	5.05	6.95	14.7	7.3	13.3	74.65
Standard Deviations	2.209	3.742	3.970	2.818	4.129	3.354	8.198	5.560	7.531	
Detroit Sample										
Means	4.28	4.40	6.28	7.56	5.92	5.60	18.80	5.64	13.32	71.80
Standard Deviations	2.50	4.26	4.46	3.69	3.46	3.06	5.98	4.58	7.84	

TABLE 9

ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES COMPARISON FOR 6 1/2 YEARS SAMPLE--APPALACHIAN PILOT SAMPLE AND DURHAM, NORTH CAROLINA, SAMPLE

MEANS AND STANDARD DEVIATIONS

	MALES		FEMALES	
	Pilot	Durham	Pilot	Durham
Auditory Vocal Automatic	10.4-3.11	10.33-4.90	8.0-3.03	10.19-4.13
Visual Decoding	13.2-3.19	12.68-3.58	10.8-4.33	12.04-3.40
Motor Encoding	12.9-4.72	14.16-4.05	10.4-6.65	12.79-4.14
Auditory Vocal Association	18.0-4.07	15.46-4.67	13.9-4.97	15.18-4.50
Visual Motor Sequencing	13.1-6.01	11.77-3.56	10.7-4.08	11.88-3.20
Vocal Encoding	12.2-3.92	14.99-6.79	10.2-5.15	14.01-5.54
Auditory Vocal Sequencing	25.4-6.42	19.78-5.26	19.1-8.05	20.60-5.50
Visual Motor Association	15.7-2.53	13.59-3.97	11.06-6.66	13.81-4.34
Auditory Decoding	19.4-7.53	19.78-5.26	19.5-7.41	19.25-5.38

NOTE: Appalachian Pilot Sample: N = 10 for both males and females.
Durham, North Carolina, Sample: Males, N = 180; Females, N = 160.

Similar adequate performances were indicated for the visual decoding tasks by the present pilot results and the studies reported by Karnes, et. al., 1968; Leventhal and Stedman, 1967; and Weaver, 1963. Each of these studies, in addition to the present results, indicated relatively inadequate performance on the visual motor association and the auditory vocal association subtasks. This is especially true of the present sample's 5½- and 6½-year-old female subjects. Karnes, et. al., 1968; Leventhal and Stedman, 1967; and the present pilot results indicatedextremely inadequate performances on the motor and vocal encoding tasks. Subject performances on the auditory vocal automatic subtask were uniformly deficient for all the studies cited above.

5. Piagetian Task Performances: In general, the present subject's performances on the Piagetian tasks, as presented in Table 10, are quite adequate for the age range 5½ to 6½ years. 31 percent of the 80 subjects tested passed at least one of the conservation tasks. The conservation tasks were ordered identity, number, and equivalence in terms of increasing task difficulty. Performance distinctions between identity and equivalence conservation are in general agreement with the theoretical statements of Elkind, 1967; and Hooper, 1967; i.e., 75 percent of the subjects failed both of these tasks, 13.75 percent passed both tasks, 11.25 percent passed identity and failed equivalence while no subjects passed equivalence and failed identity conservation. The age progression in conservation performance is primarily due to the differential performance of the male subjects. Males were superior to females on all conservation tasks at both age levels and this was espeically true of the equivalence conservation task.

TABLE 10

SUMMARY OF PIAGETIAN TASK PERFORMANCES

(40 5 1/2-year old and 40 6 1/2-year-old subjects
with equal numbers of males and females)

	5 1/2-Year Sample				6 1/2-Year-Sample			
	Males		Females		Males		Females	
(A) Conservation Tasks								
1. Discontinuous Quantity (Identity)	.65	20%	.55	15%	1.2	40%	.60	25%
2. Discontinuous Quantity (Equivalence)	.45	10%	.15	5%	1.0	30%	.35	10%
3. Number	.70	20%	.55	20%	.95	30%	.45	15%
(B) Logical Operations Tasks								
1. Seriation (Unidimensional)	13.1	55%	11.5	50%	13.5	50%	11.8	45%
2. Serial Correspondence	4.2	40%	3.8	30%	4.45	45%	3.75	30%
3. Multiple Seriation	.70	15%	1.05	30%	1.20	40%	.95	15%
4. Multiple Classification	.65	15%	1.05	30%	1.30	35%	.60	10%

TABLE 10 (Continued)

(C) Conservation Tasks (Combined Male and Female)	Age Comparisons--% Passing	
	5 1/2	6 1/2
1. Identity	17.5%	32.5%
2. Equivalence	7.5%	20.0%
3. Number	20.0%	22.5%

(D) Conservation Tasks (Combined Ages)	Sex Comparisons--% Passing	
	Males	Females
1. Identity	30%	20.0%
2. Equivalence	20%	7.5%
3. Number	25%	17.5%

Combined across all 3 conservation tasks 25% of the males were successful compared to 15% of the females.

NOTE: The 1st column under each sample subset refers to the mean number of correct trials or items, the 2nd column refers to the percentage of subjects successfully passing the respective tasks. The passing criterion for unidimensional seriation (diameter and length) was 14-20 correct items, for serial correspondence 7-10 correct items, and 2-3 correct trials for all other tasks.

TABLE 11

A COMPARISON OF CONSERVING VS. NONCONSERVING

SUBJECTS ON 5 SELECTED INDICES

5 1/2-Year Subjects (N = 40)

	Conserving Group (N = 10)		Nonconserving Group (N = 30)	
	Means			
Stanford-Binet IQ	125.0		95.571	
Peabody Picture Vocabulary Test*	56.9		46.867	
Illinois Test of Psycholinguistic Abilities*	117.7		101.750	
Multiple Classification	1.6	50% passing	.6	13.3% passing
Multiple Seriation	1.7	50 % passing	.6	13.3% passing

6 1/2-Year Subjects (N = 40)

	Conserving Group (N = 15)		Nonconserving Group (N = 25)	
	Means			
Stanford-Binet IQ	105.143		93.385	
Peabody Picture Vocabulary Test*	58.467		47.640	
Illinois Test of Psycholinguistic Abilities*	156.250		107.417	
Multiple Classification	1.467	46.7% passing	.640	8% passing
Multiple Seriation	1.467	46.7% passing	.840	16% passing

NOTE: Conserving subjects are those passing 2-3 trials on any one of the three conservation tasks, Discontinuous Quantity-Identity, Discontinuous Quantity-Equivalence, and Number. For the combined 5 1/2 - 6 1/2 year samples, 28% of these conserving subjects passed 1 task, 40% solved 2 tasks, and 32% passed all 3 tasks.

*Total Raw Score

Analyses of the logical operations tasks indicated that unidimensional seriation and serial correspondence are well within the capabilities of the present subject sample. Approximately 50 percent of the sample for both age groups successfully completed these tasks. There was no discernable age progression for unidimensional seriation or serial correspondence. Multiple seriation and multiple classification appeared to be of equal difficulty. The male subsample showed a marked age progression for these tasks. There were no significant male/female differences for any of the logical operations tasks.

A relatively high degree of interrelationship was found across the various Piagetian tasks measured. As Table 11 shows, subjects who successfully passed one of the conservation tasks tended to score significantly higher on multiple classification and multiple seriation than did their nonconservaing counterparts. This was true for the 5½-year and 6½-year subsamples. The conserving subjects were also markedly superior with regard to Stanford-Binet IQ score, Peabody Picture Vocabulary total raw score, and the Illinois Test of Psycholinguistic Abilities total raw score.

6. Cognitive Style Measures: The results from the Kagan Matching from Familiar Figures Test and the Draw-A-Line (Motor-Inhibition test) are presented in Table 12. Performance accuracy on the Matching from Familiar Figures Test increased across the present age range. The 5½- to 6½-year-old subsample performed significantly better than the 3½- to 4½-year-old subsample. The average initial response time (an index of reflective versus impulsive behavior) also increased across the age range tested; however, these age comparisons were not significant. The average response times for the Draw-A-Line Motor-Inhibition task did increase significantly from 3½-4½ years of age to 5½-6½ years of age. This age progression was most notable for the male subsample.

TABLE 12

MATCHING FROM FAMILIAR FIGURES TEST AND DRAW A LINE (MOTOR-INHIBITION) TEST

MEANS AND STANDARD DEVIATIONS

	Matching from Familiar Figures:				Draw A line:					
	Mean Correct Trial		Mean Response Time for Initial Response (Sec.)		Mean Response Time for First Trial (Sec.)		Mean Response Time for Second Trial (Sec.)		Mean Response Time First and Second Trial Average (Sec.)	
Age/Sex	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.	Means	S. D.
3 1/2 years										
Male	3.59	0.599	6.767	3.948	9.5	7.710	7.9	7.134	8.8	7.097
Female	3.72	0.688	4.883	4.016	4.4	3.200	7.2	6.720	5.9	4.969
Total	3.665	0.634	5.825	4.092	6.95	6.430	7.55	6.939	7.35	6.295
4 1/2 years										
Male	3.29	0.682	4.658	2.085	9.6	6.103	11.9	7.816	8.9	5.224
Female	3.61	0.633	6.075	3.738	9.4	6.012	10.5	7.684	10.0	5.745
Total	3.45	0.677	5.367	3.108	9.5	6.062	11.2	7.782	9.45	5.518
5 1/2 years										
Male	2.92	0.743	6.925	5.486	11.7	5.061	19.2	15.005	15.5	9.500
Female	2.89	0.461	6.758	2.417	15.9	9.513	17.8	11.873	18.9	12.259
Total	2.905	0.619	6.842	4.240	13.8	7.903	18.5	13.548	17.2	11.098
6 1/2 years										
Male	2.63	0.471	5.825	2.596	16.8	19.758	20.5	17.840	18.8	18.214
Female	2.65	0.676	7.792	3.443	9.1	7.687	12.6	4.443	11.1	4.560
Total	2.64	0.583	6.808	3.204	12.95	15.477	16.55	13.587	14.95	13.824

NOTE: N = 10 for each male and female subsample.

This initial assessment of the rural, nonfarm Appalachian child reveals a picture of cultural diversity rather than uniform cognitive-intellectual deficits. Their performance on a global index such as the Stanford-Binet Intelligence Test is generally adequate. The majority of their clearest deficits tend to center upon verbal tasks or those problem settings which demand symbolic representation. In certain cases these deficits appear to increase in severity as the disadvantaged child gets older. In contrast, spatial reasoning as measured by the Frostig Developmental Test of Visual Perception, Auditory and Visual Decoding and memory functions as indexed by the Illinois Test of Psycholinguistic Abilities, and conservation or logical operations skills within the Piagetian framework do not appear to be noticeably impaired. It seems imperative that future research directed toward the children of this region which deals with additional comparative behavioral norms or with remedial intervention programs should carefully specify the particular psychological abilities and capacities in question.

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IV. The Behavioral Objectives

The essential quality for the construction of a series of meaningful objectives for the intervention curriculum is behavioral specificity. Nowhere in the current education literature is the gap between theory and operational method any clearer than that which exists between statements of objectives and actual classroom operations. Thus, considerable time must be spent conceptualizing and stating objectives in operational behavioral terms. Ideally, behavioral objectives should bridge the gap between the developmental assessment survey of the Appalachian preschool child and the final demonstration curriculum.

The problem is to define precisely what should be taught in a compensatory preschool program for Appalachian children. In order to accomplish this task, several approaches were taken. The literature in the field of early childhood education, specifically in compensatory education, was examined. Research projects and curriculum programs were scrutinized to determine what specific contents (e.g., skill areas) were being taught, and what seemed to be the particular deficiencies of certain groups of children. Training procedures were also studied to determine what instructional techniques appeared to be most effective in implementing learning. In this regard, the literature from each of the various research projects in preschool curricula emphasized different learning areas, different choices of cognitive models, and varied assumptions concerning which skills have the highest priority for preschool programs. Thus, the development of a single uniformly acceptable list of preschool objectives is most difficult.

In order to provide consistency in the present list of objectives, we have placed the objectives in sequences wherever possible, ordered from simple to progressively more difficult tasks. The implication of this sequencing is that certain lower level skills are prerequisite to higher, more complex objectives. It should be noted that in some cases the delineated objectives may go beyond the developmental levels of the children for whom the present demonstration program is designed, e.g., the conservation of volume objectives. However, some of these more advanced objectives were included to suggest objectives for very advanced children and to indicate what kinds of behaviors could be taught at a later state of development.

In terms of the actual behaviors implied in the present list of objectives, no distinction has been made between spontaneous evocation of behavior and behavior elicited on cue. As the illustrative material may suggest, it is more practical to consider elicited rather than spontaneous behavior. However, if spontaneity could be programmed into a specific curriculum design, it would certainly provide a higher level, more creative program. In many cases, it was often difficult to determine the natural order of development for the various skill sequences. Even when a so-called "natural" sequencing for normative groups was provided, we could not be positive that these patterns would necessarily be the same for culturally different children. Similarly, sequences derived from research with urban disadvantaged children may be open to question in the present setting. There are many instances in the present objectives series where very similar objectives appear in two or more different categories. Rather than deleting these overlapping objectives, we have allowed them to remain to indicate the interlocking importance of many of the task sequences. For example, in distinguishing spatial relationships through the location of a series of points on a plane, a child can demonstrate at one level his sensory discrimination abilities and similarly show problem solving behavior involving higher order multiplicative relationality skills.

The objectives have been divided into the major categories of motor activities, language skills, and cognition. The initial section of orienting and attending skills is a necessary prerequisite to content specific learning. The illustrative materials section is a collection of nine examples showing the manner in which particular objectives might be presented within the demonstration program. The examples are not entire lessons, but instead describe what might become significant portions of a particular training sequence. The objectives used are drawn from the three major categories of motor activity, language, and cognition, and deal with the three methods of intervention--home visitation, mobile facilities, and television programming. Each of the teaching sequences in the illustrative examples has been developed directly from the compiled behavioral objectives. A series of five general learning principles is reiterated throughout each of the examples.

The first principle deals with assessing basal behavior. Formal and informal testing procedures and observations are employed to diagnose the child's competence in skills that are prerequisites to a given behavior. For example, in order to climb, a child must be able to: coordinate his arm and leg movements, pull his weight up by his arms, maintain his balance, and grasp with his hands. Without these prerequisite basal behaviors, the child could not learn to climb. Therefore, before an objective is attempted in a particular lesson, it is logical to identify the necessary basal behaviors and to investigate them, thus insuring that the child already exhibits these antecedent behavior patterns.

The second principle deals with successive approximations. This is the process by which a given skill is broken down into small sequential steps through which a child may progress with a minimum of errors. The skill base thus developed is complete in that it has no experience or knowledge gaps. Since the number of possible errors has been carefully reduced, the child is more likely to encounter success thus enhancing his feelings of self-competence. The present arrangement of the behavioral objectives insofar as was possible, lists the objectives in a successive order of increasing complexity.

The third principle, immediate feedback, is concerned with the child's motivation for learning. The assumption is made that a child is most interested in knowing the correctness of a response immediately after he has made it. The longer the intervening time between the response and the confirmation of that response, the less interested a child becomes. To capitalize on this fact within a learning experience, the child should receive immediate and continual feedback as to the rightness or wrongness of his responses. This feedback can take several forms depending on the content of the learning experience. For example, the child who is working with manipulative devices (e.g., putting together a puzzle) receives natural feedback because the task itself tells him whether a particular response is right or wrong. Some social experiences provide natural feedback, as in the case of a child learning to talk. Teachers can structure learning to capitalize on natural feedback. They can provide feedback in the form of reinforcement, attention and praise, or simply comment frequently on the accuracy of the child's work. Immediate feedback increases efficient learning and decreases the possibility of failure. The child is less likely to be frustrated because of errors he cannot find, less likely to repeat errors, more likely to learn from a given trial and more likely to progress through the learning sequence successfully.

The fourth principle is active involvement. Active involvement deals with structuring material so that the child performs a task himself instead of seeing a demonstration or hearing a description. Actively working on the problem requires that the child attempt to deal with problems in terms of his own abilities and understandings. Recall of both the particular skills involved in solving a problem and a task solution itself is increased. The liklihood that this learned information will be transferred to new problem situations is presumably enhanced. Active involvement demands that the child maintain attention in order to know how and when to respond. His attention behavior is then reinforced if he responds correctly. In dealing with disadvantaged children, active involvement in tasks which closely approximate real-live situations is likely to result in transfer of learned skills to novel problem settings.

Application of the fifth principle, progression at one's own rate of speed, requires that a child not be forced to move ahead of his present understanding. This principle is closely related to the principles of assessing basal behavior and successive approximation. Provision must be made for the individual child to progress through successively more difficult tasks at his own rate of speed.

The evaluation and follow-up sections of each illustrative piece are concerned with an ongoing assessment of the effectiveness of the teaching program. The comments made relative to the evaluation of television programs differs from those made concerning evaluation of lessons presented via home visitation or mobile facility teachers. In the former case, instruction will most probably be geared to the "average child" while in the latter cases it is assumed that instruction will be specifically oriented to the individual child.

BEHAVIORAL OBJECTIVES FOR A PRESCHOOL CURRICULUM

OUTLINE

ORIENTING AND ATTENDING SKILLS

I. Competition

II. Delay and Character of Rewards

III. Direction Following

IV. Impulse Control

V. Persistence

VI. Social Skills

VII. Task Completion

MOTOR ACTIVITY

I. GROSS MOTOR ACTIVITY

   A. Aiming

   B. Alternating Sides of Body

   C. Balance

   D. Basic Forms of Movement

   E. Body Control

   F. Directional Movement

   G. Elaborated Forms of Movement

   H. Routine Habits

II. FINE MOTOR SKILLS

   A. Aligning

   B. Drawing and Writing

   C. Fasteners and Locks

- D. Hand Coordination
- E. Placing Objects
- F. Pouring
- G. Threading
- H. Tools
- I. Stacking Objects

II. CREATIVE ACTIVITIES

- A. Graphic Art
- B. Dramatic Play
- C. Musical Activities
    - 1. Creating musical activities
    - 2. Playing musical instruments
    - 3. Moving rhythmically
    - 4. Singing activities

LANGUAGE

Part 1: LANGUAGE CONSTRUCTION

I. PHONOLOGY. PRODUCING PHONEMES--Using and Identifying Phonemes

II. SENTENCE PRODUCTION

- A. First Order Statements
    - 1. Using singular identity statements
    - 2. Using plural identity statements
    - 3. Using NOT statements
- B. Second Order Statements. Polar Attributes
    - 1. Making polar discriminations
    - 2. Making multiple polar discriminations

    3. Making plural polar discriminations
    4. Making polar deductions
    5. Using special polars
        a. NEXT TO
        b. BEFORE and AFTER
C. Second Order Statements. Non-polar attributes
    1. Using color names and prepositional phrases in sentences
    2. Using identity statements
D. Second Order Statements. Abstract Concept Words
    1. Using AND
    2. Using ONLY
    3. Using IF-THEN
    4. Using OR
    5. Using OTHER
E. Second Order Statements. Advanced Parts of Speech
    1. Using verb expansions
    2. Using pronouns
    3. Using expanded polar concepts

Part 2: DESCRIPTIVE LANGUAGE

I. DESCRIBING OBJECTS AND EVENTS
    A. Labeling Objects, Actions and Qualities
    B. Describing and Identifying Objects on the Basis of Different Attributes
    C. Using Phrases and Sentences of Increasing Complexity
    D. Engaging in Discussion with a Group

II. DRAMATIC EXPRESSION

   A. Expressing and Describing Feelings and Emotions

   B. Enacting Words, Phrases, Scenes and Stories

   C. Telling Stories

COGNITION

Part 1: SENSORY DISCRIMINATION

I. AUDITORY DISCRIMINATION

   A. Distinguishing Between Sounds

   B. Distinguishing Rhythm

   C. Identifying Sources of Sounds

   D. Producing Sounds

   E. Distinguishing Rhyme

   F. Distinguishing Initial Sounds

II. PERCEPTUAL DISCRIMINATION

   A. Making Balance Discriminations

   B. Making Body Image Discriminations

      1. Moving body selectively

      2. Identifying parts of own body

      3. Identifying and organizing parts of model bodies

   C. Making Color Discriminations

   D. Making Distance Discriminations

   E. Making Form Discriminations

      1. Matching forms

      2. Recognizing missing parts from wholes

      3. Identifying basic shapes

   4. Identifying straight and curved line segments
   5. Joining shapes to construct familiar objects
   6. Identifying printed symbols
   7. Making figure-ground discriminations
   8. Identifying form-constancy

F. Using Number
   1. Using cardinal number
   2. Using ordinal number
   3. Using number terms

G. Making Sequence Discriminations
   1. Sequencing in time
   2. Sequencing in space

H. Making Size Relationship Discriminations
   1. Using SAME-DIFFERENT
   2. Ordering articles by size
   3. Identifying and applying terms

I. Making Spatial Arrangement Discriminations
   1. Identifying and applying terms
   2. Discriminating right and left
   3. Reproducing patterns of spatial arrangement
   4. Identifying objects in various spatial perspectives
   5. Hypothesizing based on spatial clues

J. Making Time Discriminations
   1. Identifying and applying terms
   2. Hypothesizing based on time concepts

K. Making Weight Discriminations

III. TACTILE DISCRIMINATION

  A. Distinguishing Between Objects by Touch

  B. Identifying and Applying Tactile Terms

    1. Using temperature terms

    2. Using texture terms

    3. Identifying objects by their characteristics

    4. Recalling the tactile characteristics of objects

Part 2: HIGHER ORDER COGNITIVE ACTS

I. MEMORY TASKS

  A. Recognition

  B. Recall

    1. Immediate response tasks

      a. Verbal

      b. Motor

    2. Delayed response tasks

  C. Information Coding

    1. Information coding for memory purposes

    2. Memory strategies

    3. Acquisition processes

II. QUANTITATIVE SKILLS

  A. Object Distinctions Via Measurement

    1. Visual transfer

    2. Manual transfer

    3. Body transfer

- 4. Unit iteration
- 5. Length conservation

B. Number Usage

C. Set Relationships

III. SERIATION TASKS

A. Unidimensional Seriation

B. Serial Correspondence

C. Multiple Seriation

IV. CLASSIFICATION

A. Classification Considering an Increasing Number of Dimensions

1. Arranging classification tasks within a developmental sequence
2. Recognizing SAME and DIFFERENT
3. Sorting on one dimension
4. Sorting on two dimensions
5. Sorting hierarchically
6. Using verbal descriptions to guide classification
7. Giving verbal descriptions of classification
8. Selecting dimensions for sorting

B. Classification of the Progressively More Abstract

C. Classification on Different Bases

1. Use or function
2. Number and size
3. Physical properties
4. Relational - contextual
5. Categorical - inferential

V. CONSERVATION

A. Conservation of Number

1. Matching objects on a one to one relationship

2. Arranging objects in linear order

a. Given a complete sample

b. Given a partial sample

c. Given a demonstration pattern that is soon removed from view

d. Given verbal instruction

3. Reproducing three-dimensional constructions

4. Conserving equality after physical correspondence is destroyed

a. When the visual stimulus is removed

b. After a movement of objects

1) Through lateral displacement

2) Through regrouping

5. Conserving inequality after physical correspondence is destroyed

a. By lateral displacement

b. By regrouping

6. Conserving equality with equal addition and subtraction of objects from each group

B. Conservation of Quantity and Related Concepts

1. Conserving identity of quantity

2. Conserving discontinuous quantities

3. Conserving continuous quantities

C. Conserving Length and Distance

D. Conserving Weight

E. Conserving Area

   F. Conserving Volume

   G. Interpreting Relative to Visual Perspective

VI. PROBLEM SOLVING

   A. Logical Reasoning (Transitivity)

      1. Inferring size relationships

      2. Completing short term sequences

      3. Inferring through creating, selecting, and/or rejecting solutions

      4. Inferring by logical inclusion or exclusion

      5. Identifying cause and effect

      6. Solving problems involving patterns

      7. Completing analogies

   B. Problem Attack

      1. Mediating own problem solving attack

      2. Choosing of materials

      3. Gathering information

      4. Spatial Reasoning

         a. In the real environment

         b. On a two-dimensional model

         c. On a three-dimensional model

      5. Using examples to solve problems

      6. Testing and verifying solutions

ILLUSTRATIVE EXAMPLES

Home Visitation 1. Language--Describing Objects

Home Visitation 2. Cognition--Child Classifies Objects that Become Progressively Abstract

Home Visitation 3. Motor Activity--Alignment

Mobile Unit 1. Language--Story Telling

Mobile Unit 2. Cognition--Seriation Tasks

Mobile Unit 3. Motor Activity--Participating in Singing Activities

Television 1. Language--Phrasing Simple Polar Discriminations

Television 2. Cognition--Identifying Parts of His Own Body

Television 3. Motor Activity--Hand Coordination

ORIENTING AND ATTENDING SKILLS

I. COMPETITION

A. Compete with himself in the sense of trying to pass a previously set standard.

B. Compete with others in simple games and find reward in "winning".

II. DELAY AND CHARACTER OF REWARDS

A. Work for a reward that does not come immediately upon task completion.

B. Work for "abstract" rather than "concrete" rewards (verbal praise, "points", etc).

C. Be rewarded by the pleasure of doing and completing the task by himself ("intrinsic reinforcements") as shown by continued work without extrinsic reinforcement.

III. DIRECTION FOLLOWING

A. Follow instructions on how to perform a task.

B. Given instructions on locating an object, find the object.

IV. IMPULSE CONTROL

A. Wait for instruction on how to proceed.

B. Wait for turn to respond.

C. Refrain from handling materials that are not intended for use.

D. Listen to others without interrupting.

(The following objectives may be evaluated in terms of individual children.)

A. When a derogatory comment is directed toward him, does not return a derogatory comment.

B. When hit by another child, does not hit in return.

C. When an impolite gesture is made, does not return the impolite gesture.

D. When a fight or argument is begun, does not continue it.

V. PERSISTENCE

A. Work at a given task for increasingly extended periods of time.

B. Discover and attend to relevant aspects of a stimulus. (Given an array of objects, regroup them several times on the basis of different stated attributes.)

C. Given a task requiring the comparison of objects, and making choices among them, where the array of objects includes many distracting objects, complete the task required without being distracted.

D. Given a task which can be made increasingly demanding in terms of increasing concentration, maintenance of a set, categorization, and simultaneous consideration of several elements, keep at the task until it is done. (Given a book, select all the pages with animals on them; color people with a red crayon, animals with a blue crayon, etc.)

E. Continue working at task in the face of distraction, frustration, or failure.

VI. SOCIAL SKILLS

A. Work with other children on a task.

1. Give another child information, help, or materials when required or requested.

2. Comply with another child's wishes.

3. Initiate social situations with other children.

B. Contribute to group discussion.

C. Given an unfamiliar, difficult problem to solve, first attempt to solve it without help and when finding it too difficult, ask for help.

D. Use courteous expressions (please, thank you).

E. Respond to approval and praise by increasing the rate of responding. (Learn to accept and enjoy praise of adults.)

F. Voluntarily comment on some activities.

G. Use spoken language rather than gestural language for requests.

H. Assert own rights as well as respecting the rights of others.

I. Given an unfamiliar task with another child, direct and lead in the attempts to complete the task.

J. Project an independence--dependence balance in adult-child relationships.

   1. Seek recognition and approval when appropriate.

   2. Seek necessary help.

   3. Seek physical contact or to be near adults at appropriate times.

   4. Seek positive attention (vs. negative).

VII. TASK COMPLETION

A. Given successively more difficult puzzles or problems, solve the puzzles competently at each level and move on to the next level with only praise for independent work well done.

B. Complete a task before moving on to another one.

MOTOR ACTIVITY

I. GROSS MOTOR ACTIVITY

   A. Aiming

      1. Throw (roll, kick, punch) a ball or beanbag to increasingly narrow visual targets in various positions in relation to his body.

      2. Throw (etc.) ball to a verbally described position (near, far, in front of you, next to the desk, under the table).

   B. Alternation of Sides of Body

      1. Climb stairs, using alternation pattern, at an even pace.

      2. Beat out simple rhythm alternately with right and left hands (or feet).

   C. Balance

      1. Given a balance beam, move forward, backward, sideways, with eyes open or closed, while carrying things, etc.

      2. Balance on toes, on one or both feet.

      3. While balancing on one foot, raise or swing other foot.

   D. Basic Forms of Movement

      1. Walk at various rates, at an even pace.

      2. Jump, landing simultaneously on both feet.

      3. Hop, on either foot.

      4. Skip, gallop, run, etc.

   E. Body Control

      1. Given a path defined by two rows of benches (later, lines on the floor), move along the path without touching the sides.

      2. Given ten pins set up with some space between them, walk through them without knocking them over.

         a. Move through the pins performing the same movements as a 'leader'.

         b. Move through the pins following verbal directions.

F. Directional Movement

1. Move to a visually marked position in various patterns (turn right three steps, left, etc.).

2. Move in a verbally described direction (high, low, forward, backward).

G. Elaborated Forms of Movement

1. Walk, jump, hop, etc., backward, sideways, at various rates, high and low, in one-half and quarter turns.

2. Swing arms back, sideways, at various rates, high, low, in circles.

H. Routine Habits

1. Unassisted dressing.

2. Given a basin of warm water, soap and a towel, wash and dry face completely.

3. Eat with the proper utensils, holding them in the socially acceptable manner.

4. Wash hands after being in the bathroom.

II. FINE MOTOR SKILLS

A. Alignment

1. Line up blocks or cards in 'trains'.

2. Place two rods so that marks on each of them are lined up.

3. Place a rod so that one end is at a mark on a piece of paper.

4. Set a dial to a premarked position.

B. Drawing and Writing

1. Hold and use a crayon, then a pencil comfortably.

2. Draw a line, staying inside the boundaries of a path.

3. Fill in between lines in a drawing.

4. Trace, using stencil cutouts.

5. Trace a drawing.

6. Draw straight lines between dots.
7. Complete incomplete patterns or letters (A).
8. Copy simple patterns or letters.

C. Fasteners and Locks

Given a collection of frames to which are attached pieces of wool, leather, etc., which can be buttoned, hooked, tied together, etc., perform the fastenings. Operate:

1. Buttons
2. Zippers
3. Snaps
4. Key locks
5. Combination locks (simplified)
6. Door knobs
7. Hooks

D. Hand Co-ordination

1. Use two hands to hold and move an object (a glass).
2. Alternate use of hands in simple tasks (as in holding a glass).
3. Use both hands in a coordinated effort to accomplish a task. (Building a sand castle requires that both hands do different things but work together.)
4. Use one hand to hold an object in place while the other works (as in hammering, drawing).
5. Given an outline drawing, color inside the lines.
6. Cut out a given figure with scissors. Reasonable accuracy of cutting expected.
    a. Cut along a fold produced by folding a piece of paper.
    b. Cut off the corner of a square piece of paper.
    c. Given a square piece of paper folded along the diagonal to produce a triangle, cut a square from the center of the fold.
7. Given 'cutouts', paste them on an outline with the same configuration.

E. Placing Objects

1. Place objects of various shapes into correspondingly shaped holes.

2. Place objects onto a drawing of the same size and shape as the object.

3. Given ten cylinders decreasing in diameter, and a container bearing ten correspondingly sized holes, put each cylinder into its appropriace hole (seriation in a single dimension).

F. Pouring

1. Pour from and into variously shaped containers.

2. Pour up to a marked line.

3. Pour from a large container into a smaller container.

G. Threading

1. Thread a rigid object, e.g., wooden stacking disks, onto a rigid pole.

2. Thread an object with two or more holes onto two or more appropriately placed poles. (Given a board with three holes in it and another board with three matching dowels, fit the board with the holes onto the board with the dowels so that the dowels come through the holes.)

3. Thread a rigid object onto a flexible wire.

4. String beads.

5. Complete a punched sewing card, alternating direction (start from above, then from below, etc.)

6. Lace shoes.

H. Tools

1. Use a hammer first on pegs, then on small nails.

2. Use pliers.

3. Assemble nuts and bolts.

I. Stacking Objects

1. Build a tower, first with flat blocks, then with cubes, finally with rectangular blocks.

2. Stack a large object on a smaller object so that it balances.

III. CREATIVE ACTIVITIES

A. Graphic Art

1. Given a set of blocks
    - a. Create buildings and name them.
    - b. State a kind of building and then build it.
2. Given paints and brushes
    - a. Spread and overlay paint freely.
    - b. Paint lines, circle, etc.
    - c. Fill in blocks of color.
    - d. Name his paintings.
3. Given fingerpaints and paper
    - a. Overlay and mix colors.
    - b. Experiment with patterns.
4. Given modeling clay or plasticine
    - a. Beat and pound materials, then break and roll them.
    - b. Name products.
    - c. Pull out or add on details (nose, ears, arms).
5. Identify paper by color, texture, size, etc., and experiment with different kinds of paper in a collage.
6. Construct representations of objects with fingerpaints, crayon drawing, pasting and cutting.
7. Construct a model of a familiar object in clay.

B. Dramatic Play

1. Given a simple sentence, pantomine the action indicated.
2. Given a puppet, manipulate the puppet and speak for it in sentences.
3. Interpret roles of members of the family through dramatization.
4. Given miniatures in a doll house setting, manipulate the miniatures as in playing house. Name the objects, their function, and relate what is going on.

5. Given objects described in a story or pictures in a book, enact the story as it is read, using objects named in the story.

6. After a picture book has been read aloud, re-enact the story using the pictures as a guide.

7. Act out a favorite activity or story showing action by bodily movements, gestures, and facial expression.

C. Musical Activities

1. Child creates musical activities

    a. Chant while working or playing (as when pulling a wagon).

    b. Experiment with instruments and sounds.

    c. Invent new words for a song.

    d. Given a song, compose additional simple rhyming verses.

    e. Make up extra verses for a song.

    f. Choose an appropriate instrument and accompany a song or a recording.

    g. Dramatize a song.

    h. Make up a song cooperatively. Sing the words in developing the tune.

    i. Make up a song individually. Sing the words in developing the tune.

2. Child plays with musical instruments.

    a. Use instrument to accompany movements. (Beat rhythm sticks when marching, but not necessarily in time with steps.)

    b. Play an instrument, responding accurately to the tempo of a recording or another instrument.

    c. Given a series of bells forming an octave of tone and semitones, strike the bells with a hammer and play the chromatic scale.

    d. Given a double series of bells, one arranged in chromatic order and the other in random order, strike the bell in the ordered series and then find its component in the random series. Pair them and continue with the rest of the bells.

   - e. Play an instrument along with a small group of other children.
   - f. Given the sound of an instrument, identify the instrument.
   - g. Given pictures of instruments, name them.

3. Child moves rhythmically.
   - a. Make random movements using large muscles.
   - b. Move rhythmically, in individual manner, for short periods of time.
   - c. Increase the emphasis of the rhythm when teacher emphasizes movement with an accompaniment.
   - d. Adjust movements to faster and slower tempos.
   - e. Adjust body movements to accompaniment of regular beats (keep time).
   - f. Adjust bodily movements to accompaniment which involves contrasts (slow-fast, light-heavy).

4. Child participates in singing activities.
   - a. Sing spontaneously when playing.
   - b. Respond with actions to a song sung by others.
   - c. Given a game involving a chant, use the repetitive chant as the action is performed.
   - d. Given a song, clap hands to its rhythm.
   - e. Join in with an occasional word or phrase as another sings.
   - f. Given a record or song which requires verbal participations, join in at the appropriate places.
   - g. Sing with an adult or group but not always in time with them or using the same words.
   - h. Sing along with adult or group, matching tones.
   - i. Sing along.
   - j. Select and request favorite songs.
   - k. Name songs sung or played by others.
   - l. Adjust voice range to center around G above middle C, but vary voice with the particular activity and purpose of singing.

LANGUAGE

Part 1: LANGUAGE CONSTRUCTION

I. PHONOLOGY: PRODUCTION OF PHONEMES--(Child uses and identifies phonemes.)

A. Produce the full range of English phonemes (ǎh, bē, băh, etc.)

B. Stress the appropriate syllable in common words (ba'by).

C. Given pictures of objects or scenes differing in only one phoneme and a word to match one of the pictures, select the picture as the word is spoken (mat, mitt).

D. Given object words differing only in a single phoneme and a picture of one of the objects, repeat the word which names the object.

E. Distinguish between sounds of words when saying them (witch - which).

F. Given a key word, match the sound pattern with a rhyming word (cat - hat).

G. Given a compound word, divide it into its parts orally. (The word 'something' is composed of the word 'some' added to the word 'thing'.)

H. Given a series of sounds, repeat the complete series accurately (ball-pot-snap-cot-king).

II. PRODUCTION OF SENTENCES

A. First Order Statement

1. Child uses singular identity statements correctly.

a. Given an object and the question, 'What is this?' answer the question with the production of the correct sentence. (THIS is a ball.)

b. Given an object and a statement, 'This is a (ball),' answer the statement in the form, 'YES, this is a (ball).'

c. Use both affirmative and NOT statements in reply to the question, 'What is this?' (This IS a ball. This is NOT a book).

2. Child uses plural identity statements correctly.

    a. Given three or more like objects and the question, 'What are these?' answer the question in the form, 'THESE are (balls).'

    b. Given one object paired with another of the same kind, answer the question, 'Tell me about these,' in the form, 'THESE are (balls).' THESE and the S-endings are to be enunciated clearly.

3. Child uses the NOT statement correctly.

    a. Given an object (a can) and a question asking something the object is NOT (Is this a tree?), answer, 'NO.'

    b. Given an object (a can), and the question, 'Is this a (tree)?' state that, 'This is NOT a (tree).'

    c. Given a question asking about one object and a different object (Object: bicycle; question: 'Is this a (house)?'; answer: 'NO, this is NOT a (house).'

    d. Given the name of an object, point to an object that is NOT the object named.

    e. Given an object, answer the statement, 'Tell me what this is not,' with a list of sentences using the word NOT.

B. Second Order Statements. Polar Attributes

1. Child phrases polar discriminations correctly.

    a. Given two objects describable by polar opposites, state 'This (line) is (long); this (line) is not (long)' while pointing to the appropriate object. Polar qualities may include long-short, hot-cold, big-little, soft-hard, fast-slow, fat-skinny, tall-short, dark-light, straight-curved, smooth-rough, heavy-light, loud-soft, here-there, up-down, full-empty, few-many, early-late, summer-winter, day-night, etc.

    b. Given two objects, one being pointed to, answer a polar question 'Is this (line) (long)?' with a full statement, 'Yes, this (line) is (long).'

    c. Given the question, 'What can we say about this (line)?' while one of the pair of polar attribute objects is being pointed to, answer, 'This (line) is (long),' or 'This (line) is not (long),' as fits the polar qualities of the situation.

    d. Given the familiar polar discriminations that become increasingly more abstract, answer them correctly in a complete sentence. Brother is a boy; sister is a ________. In daytime it is light; at night it is ________.

2. Child uses multiple polar discriminations correctly.

   a. Given two objects representing the extremes of two polar opposites (short, fat line; long, skinny line), state, pointing to one of the objects, 'This (line) is (fat). This (line) is not (long).'

   b. Given one of a pair of objects (a large ball and a small ball), representing polar opposites and the question, 'What can I say about this (ball)?' answer a series of correct statements in the form, 'This (ball) is (big).'

   c. Given a pair of objects representing polar opposites and the question, 'What is this (ball) NOT?' answer a series of correct statements in the form, 'This (ball) is NOT (big).'

3. Child uses plural polar discriminations properly.

   a. Given two objects alike in one polar dimension (two fat dogs) but different in another dimension (one tall dog and one short dog), answer the question, 'What can I say about these (dogs)?' by stating, 'These (dogs) are (fat).'

   b. Given two objects alike in one polar dimension (fat dogs) but different in another (one dog taller than the other dog), state the dimensions in the form, 'This (dog) is not (tall). This (dog) is (fat),' while pointing to the correct figures.

4. Child uses polar deductions correctly.

   a. After learning the opposites of different polar concepts, state the untrue polar in a NOT statement and the true polar in a positive statement, using the form, 'This (line) is NOT (long). This (line) IS (short).'

   b. Given equivalent statements, answer in yes-no statements in the form, 'Is this (line) (short)?' 'YES, this (line) is (short).'

   c. Given the question, 'What can I say about this (object)?' answer it using a complete statement in the form, 'This (line) is NOT (long).'

d. Given the question, 'What can I say this object is NOT?' answer in complete statements using the form, 'This (line) is NOT (long).'

e. Given an object, answer YES-NO questions about it using complete statements in the form, 'Is this (line) (long)?' (short)?' 'YES, this (line) is (short).'

f. Given a NOT statement change the SUBJECT and PREDICATE to the polar concepts interchangeably in the forms:

1) SUBJECT, This (woman) is not (fat). This (man) is not (fat).

2) PREDICATE, This (rock) is not (smooth). This (rock) is (rough).

5. Child uses special polars correctly.

a. Child uses the phrase NEXT TO correctly.

1) Given pairs of objects, locate one as being NEXT TO the other. [This (ball) is NEXT TO this (ball).]

2) Given questions involving NEXT TO concepts, answer in YES-NO statements. [No, this (ball) is NOT NEXT TO this (ball).]

3) Given three objects, locate the one that is NOT NEXT TO a marked one in a statement in the form, 'This (ball) is NOT NEXT TO that (ball).

4) Given three different objects, identify each one as being NEXT TO another one in a statement. [The (ball) is NEXT TO the (box); the (box) is NEXT TO the (book); the (book) is NEXT TO the (box).]

b. Child uses the terms BEFORE and AFTER correctly.

1) Given two objects, identify one as being BEFORE the other in space, as viewed from a particular starting point, by making a statement in the form, '(A) comes BEFORE (B).'

2) Given two objects identified one as being BEFORE the other (A is before B), answer questions such as 'What comes BEFORE B?' with a full statement in the form 'A comes BEFORE B.'

3) Given two objects, identify one as coming AFTER the other in space as viewed from a particular starting point by making a statement in the form, 'B comes AFTER A.'

4) Given two objects identified as one coming AFTER the other (B comes AFTER A) answer such questions as, 'What comes after A?' with full statements in the form, 'B comes after A.'

C. Second Order Statement: Non-Polar Attributes

1. Child uses color names and prepositional statements in complete sentences.

a. Given an object and a question asking for a color name or prepositional statement, answer the question in the form, The ________ is __________. (Where is the house? The house is on the hill.)

b. Given a familiar object having several attributes, including a definable location, and the question, 'What can I say about this (house)?' name the different attributes of house in the form, 'The (house) is (on the hill).' Several attributes should be stated in this form.

2. Child uses identity statements correctly.

a. Given a familiar object that belongs to more than one class, state the different class names for the object. (Dog, animal, pet, friend.)

b. Given a familiar object that belongs to more than one class and the question, 'What else is this (dog)?' answer in the form, 'This (dog) is a(n) (animal).'

D. Second Order Statement: Abstract Concept Words

1. Child uses AND correctly in a sentence.

a. Given an object and two of its characteristics, connect them with the conjunction AND in a sentence. (This ball is big AND red.)

b. Given the question 'What can I say about this object?' identify its characteristics and join them with the conjunction AND in a sentence. (This house is small AND white.)

c. Given an object, identify a present and an absent characteristic and state them in a sentence in the following form using AND to connect them, 'This (ball) is (round) and NOT (flat).'

2. Child uses ONLY correctly in a sentence.

a. Given an array of objects containing a variety of characteristics, select ONLY those containing specific characteristics as named in a question. (Which objects are ONLY red and black?)

b. Given an array of objects and a question asking for ONLY objects having a particular characteristic, identify these objects in a sentence using the word ONLY. (What kinds of squares are red? ONLY the big squares are red.)

3. Child uses IF-THEN reasoning in a sentence.

    a. Given two groups of objects, each group alike in two attributes (red and round blocks, blue and square blocks) answer the question 'IF a (block) is (red), what else is it?' in the form 'THEN it is also (round).'

    b. Given two groups of objects, each group alike in two attributes, (red and round blocks; blue and square blocks), one of the objects being hidden, describe the two possible objects that could be hidden in the form, 'IF the (block) is (red), THEN it is (round).'

4. Child uses OR correctly in a sentence --Given some objects and the question, 'Which one of the objects am I thinking about?' reply, 'Maybe this (doll) OR this (ball).'

5. Child uses OTHER correctly in a sentence.

    a. Given a direction to draw something, do so. Given the direction to draw something OTHER than what has been drawn, draw something different. (A child draws a circle; then drawing something OTHER than a circle, he draws a square.)

    b. Given two identical, desirable objects, one already in his possession, ask for the OTHER one in the form, 'Give me the OTHER one.'

E. Second Order Statements: Advanced Parts of Speech

1. Child uses verb expansions correctly.

    a. Use IS and ARE when appropriate in sentences rather than omitting them. (He my friend; he IS my friend.)

    b. Use the appropriate verb form for different subjects in the present tense rather than using only one verb form. (Chocolate milk LOOKS good.)

    c. Use the appropriate verb form for different subjects in the past tense rather than using only one verb form. (We were hungry.)

   d. Use IS, AM, and ARE in sentences where appropriate rather than BE when describing a recurring event. (Sometimes he be riding a horse.)

   e. After being presented an appropriate question, answer it using the present participle of a verb ('ing') in a complete statement. (What is John doing? John is standing.)

   f. Given pictures of objects, answer a 'what-doing' question with a complete statement. (What is the man doing? The man is eating.)

   g. After answering the 'what-doing' question, expand the statement to include the 'where' aspect of the occurrence in sentence form. (What are the boys doing? The boys are throwing stones in the water.)

   h. After answering the 'what-doing-where' question, expand the statement to include the 'why' aspect of the occurrence in sentence form. (What are the birds doing? The birds are splashing in the water to get clean.)

2. Child uses PRONOUNS correctly.

   a. Given pictures of humans and objects, identify them as HE, SHE, THEY, or IT.

   b. Given a demonstration of I and YOU in an action scene, describe what I and YOU have done in a complete sentence. (I walk across the room and YOU watch me.)

   c. Given examples of statement using proper or person-referral nouns, rephrase the statement using pronouns instead. (John is running. HE is running.)

   d. Given examples of objects that are sex-related (dolls) and examples that are neutral, ask for the object (s) using the appropriate object pronoun, HIM, HER, THEY. (Give me THEM.)

3. Child uses expanded polar concepts correctly.

   a. Given three objects arranged in order of increasing size, locate the BIG one, the BIGGER one, and the BIGGEST on in response to an appropriate question. (Which one is biggest?)

   b. Given three objects arranged in order of decreasing size, locate the SMALL one, the SMALLER one, and the SMALLEST one in response to an appropriate question.

c. Given three items differing only in an attribute which can be stated in comparative form (BIG, BIGGER, BIGGEST), and a question requiring production of a comparative form ('How is this coffee different from the other coffee?'), answer the question using comparative form in a complete statement. (It is colder.) (Tasks may also apply to such concepts as hotness, fatness, lightness, smallness, coldness, skinniness, softness, shortness, tallness, largeness, longness, heaviness, etc.)

4. Child alters suffixes to match the structure of sentences.

   a. States plurals correctly.

      1) Regular. (Here is a chair. Here are two chairs.)

      2) Irregular. (leaf - leaves; knife - knives; man - men)

   b. States verb forms correctly.

      1) Present participle. (This girl likes to swim. Here she is swimming.)

      2) Past participle. (Mother is closing the door. The door is closed.)

      3) Irregular. (steal - stole; write - wrote)

   c. States comparative forms correctly.

      1) Comparative, 'er'. (This tree is tall. This tree is taller.)

      2) Superlative, 'est'. (All these rocks are big, but this one is the biggest.)

      3) Irregular

         a) Good, better, best. (This candy looks good. This candy looks even better.)

         b) Many, more, most. (This woman has many hats. This woman has even more.)

Part 2: DESCRIPTIVE LANGUAGE

I. DESCRIBING OBJECTS AND EVENTS

A. Child labels objects, actions and qualities.

1. Given an object, name it.
2. Given an array of objects, select each object named. (Which one is a skate?)
3. Given a picture of a single object, name it.
4. Given pictures of related objects, name the object pointed to (cup and saucer, tree and plant).
5. Given an action word, act it out (running).
6. Given a demonstration of an action, name it (skipping).
7. Given the name of an object, describe it fully.
8. Given an object, verbally characterize the object in a number of unique meaningful ways. (Yellow block. What is it? What is it made of? What color is it? What do you use it for? It is a wooden, yellow block that I can use to make a house.)
9. Given a word, state its opposite (hot-cold).
10. Given a picture of an object, supply gestures which are appropriate for the manipulation of the given objects. (Given a picture of a hammer, pretend to pound a nail.)

B. Child identifies and describes objects on the basis of different attributes.

1. Given an object and a description of it, state whether the description is true or false. (Do birds fly? Do trains cry?)
2. Identify and describe an object in terms of its physical characteristics. (A chair is something that has a back, a seat and four legs.)
3. Identify and describe an object in terms of its function. (A chair is something you sit on.)
4. Identify and describe an object in terms of its location. (A chair is something you sit on.)

5. Build a cumulative verbal description of an object. (House, brown house, small brown house.)

C. Child uses phrases and sentences of increasing complexity.

1. Progress from pointing and one word requests to sentences. (Paint, I want to paint.)

2. Given an example of an object (noun) with several obvious attributes translate the example into the proper words. (a red-spotted ball.)

3. Given an example of an object (noun) which could be modified by prepositional phrases (the red ball in the box), translate the example into the proper words.

D. Child engages in discussion.

1. Persuade someone to do something.

2. Prove a point.

3. Request or provide examples.

4. Request and give clarification or definition.

5. Request and give reasons for a statement.

II. DRAMATIC EXPRESSION

A. Child expresses and describes feelings and emotions.

1. Change tone of voice in order to express opposite statements. (I am sad. I am happy.)

2. Repeat the dialogue or refrain of a known story or poem using variations in voice to show feelings of the characters and their personalities.

B. Child can enact words, phrases, scenes and stories.

1. Pantomime action words (gallop, hop, slide).

2. Pantomime familiar storybook characters (Goldilocks).

3. Given a phrase describing an action, 'act out' the phrase (bounce a ball).

4. Pantomime an action object (train) accompanied with speech or sound effects.

5. Use puppets, stick figures, etc., to act out a portion of a story.

6. Act out a scene of a very familiar story or poem with dialogue.

7. Given a story, a flannel board and felt story characters, re-enact the story. Characterization and sequence of events should be accurate.

C. Child tells stories.

1. Given a picture, suggest names for the main characters and a good title for the picture.

2. Given several pictures of familiar scenes, tell all that you know about each one.

3. Narrate real events, in sequence.

4. Relate anecdotal incidents from his experience. The report should include a main idea and related details.

5. Given the beginning of a story, make up an ending to the story.

6. Given a story, make up another one similar to it.

7. Make up an original story.

8. Tell a story in sequence with appropriate voice and intonation.

COGNITION

Part 1: SENSORY DISCRIMINATION

I. AUDITORY DISCRIMINATION

A. Child distinguishes between sounds.

1. Identify a sound that is the same as a sample.

2. Given a tone, match it (with a tone bell or a step on a xylophone that is the same).

3. Given two continuous sounds, presented simultaneously or successively, state which one lasted longer.

4. Given two sounds, state which is louder or softer (the shaking of feathers versus the shaking of beans).

5. Given two tones, identify the higher (or lower one).

6. Given mixed directions 'Touch your ear; touch your ears,' (eye, leg, etc.) touch the appropriate objects.

7. Given the names of two pictures, one a familiar object (table) and the other a nonsense picture to which a nonsense syllable has been arbitrarily assigned, select the picture named in an oral direction. Task can become increasingly difficult (girl-harry; to fish-fith).

8. On hearing a story with various character voices (The Three Bears), identify the characters in the story by the tone of voice.

B. Child distinguishes rhythm.

1. Match and copy a rhythm pattern.

2. Given a rhythm pattern, state which note is accented. (Fast-slow; regular-irregular; syncopation-waltz time, etc.)

3. Repeat a line of poetry accenting different words.

C. Child identifies the source of sounds.

1. Identify animal sounds by selecting the picture of the animal after the sound has been made.

2. Given a sound, state what is producing the sound. This can involve discrimination between different musical instruments, or between other sources of sound (table being moved, water running, pots being washed, etc.)

3. Given a pitch-pipe sound or someone moving while blindfolded, tell in what part of the room the sound was made.

D. Child produces sounds.

1. Given direction, produce a loud sound and a soft sound.

2. Given a 'sound' but no sensory stimulus, verbally describe how objects would sound (a drum versus a music box).

E. Child distinguishes rhyme.

1. Given a rhyme, repeat it, enunciating clearly the rhyming words.

2. Given an incomplete rhyme (Hickory dickory dock, a mouse ran up the ______), supply the appropriate rhyming word.

3. Given an unfamiliar rhyme or riddle (I am a color. I rhyme with you. What am I?), complete the couplet or riddle with a rhyming word.

F. Child distinguishes initial sounds.

1. Given a word and noting its initial sound, clap when a word beginning with the same sound is named.

2. Given a word and noting its initial sound, name another word with the same initial sound.

II. PERCEPTUAL DISCRIMINATION

A. Balance

1. Given two examples of scales (drawings of children on a teeter-totter), one that is balanced, another that is not, select the scale that is balanced.

2. Given a scale tipped to one end, balance it by adding to the other side and say that it is balanced.

B. Body Image

1. Child moves his own body selectively.

a. Move various parts of body independently (or in combination) on verbal command.

b. Demonstrate various body movements in front of a mirror following teacher's instructions.

2. Child identifies parts of his own body.
    a. When teacher points to part of body on a doll or picture and names that part, touch the same part of his own body.
    b. Touch various parts of body on verbal command.
    c. Name the parts of his own body while simultaneously touching them.
    d. Given a picture or model of people in various positions, adopt a pose identical to that of the model in the picture.
3. Child identifies and organizes parts of model bodies.
    a. Given a representative picture (mother, sister, etc.), identify the family role depicted.
    b. Given an incomplete clay person or doll, name the missing part.
    c. Given an incomplete drawing (of a person or face), complete the drawing.
    d. Assemble a person or face from cut-out pieces (a six-piece puzzle of a boy or girl), and name the parts.
    e. Draw a picture of self which includes considerable detail.

C. Color Recognition

1. Given an array of colored objects, select one that exactly matches a sample.
2. Given a mixed array of colored tablets, pair the identical ones.
3. Pick out a colored object when its color lable is supplied by a teacher.
4. Pick out a color when its label is supplied by a teacher.
5. State the labels for each of six colors when they are pointed to by a teacher.
6. Given a group of objects, sort them by color.

D. Distance

1. Given a question asking to name something 'near, far, close to, beside,' in relation to a starting point, name an appropriate object occupying the position named by the question. (The apple is near the pear.)

2. Given a stationary object and two different blocks, place one of the blocks near the object, one far from the object and state which is which.

3. Being placed in a stationary position, name an object located here (in terms of the position) and one located there, when directed, 'Name something here. Name something there.'

4. Given an object move it up on command and down on command.

5. Given an object moving up and down (teacher raising and lowering a cube), state whether the object is moving up or down.

E. Form Recognition

1. Child matches forms.

   a. Given a form board and a set of solid forms, place the correct solid forms in the form board. (The circle in the circle space, the square in the square space.)

   b. Given an array of plane or solid figures, select the one that matches a model. The array may differ in size, color and material from the model. Discimination required should become progressively finer as the child's skill develops.

   c. Given a picture of a sqaure and a pencil, reproduce it.

   d. Given three-dimensional models of a circle, rectangle, triangle, reproduce the shapes in modeling clay.

   e. Given a demonstration of a diagonal piece of paper folded into a triangle and again folded once through the middle making a triangle half as large, reproduce the folding while the model is visible.

   f. Given a rectangle divided diagonally into two triangles and then placed with their hypotenuses turned from each other (◹ ◺) put the two pieces together to make a whole (⧅).

   g. Given a model of a diamond shaped figure, reproduce it.

2. Child recognizes missing parts from wholes--Given mutilated pictures of familiar objects (wagon, shoe, teapot, rabbit, glove), state the missing part.

3. Given an array of plane or solid geometric figures, child identifies all the basic shapes.

    a. Given two-dimensional representations of a circle, square, triangle, cube, select the appropriate form in response to a question. (Which is a circle?)

    b. State the name of a geometric shape (circle, square, etc.), when it is pointed to by the teacher.

    c. Name objects in surroundings that exemplify the shapes, circle, square, triangle (wheels).

    d. Given a sphere, pyramid, cone and cylinder, name them.

4. Child identifies straight and curved line segments.

    a. Given several lines drawn on paper (mixed, curve and straight), cut the appropriate lines named on oral direction.

    b. On oral direction, draw a curved line; draw a straight line.

    c. *Given a curved line, state that it is* curved; given a straight line, state that it is straight.

5. Child joins geometric shapes to construct more detailed objects or dissects geometric shapes.

    a. Given a jigsaw puzzle, assemble the pieces in their appropriate places.

    b. Given simple, flat geometric shapes, construct abstract pictures of familiar items (a tree from a narrow rectangle and a larger circle). Tasks should begin with two-piece pictures and progress to pictures requiring many pieces.

    c. Cut or draw lines to divide two-dimensional figures into other basic figures.

6. Child identifies printed symbols.

    a. Given a single letter A, name it by saying A.

    b. Given two very dissimilar letters, name each (A, T).

    c. Given three dissimilar letters, name each. (Continue to raise requirements for identification of letters.)

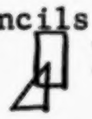
d. Given any letter in the alphabet, name it.

e. Given two dissimiliar names in print, indicate which is his.

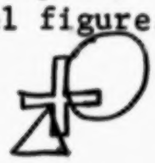
f. Given two similar names in print, indicate which is his.

g. Indicate recognition of own name in print by identifying it from a list of other names.

7. Figure-Ground Discrimination. Child can identify figures whichintersect with other figures.

   a. Given a figure which is superimposed upon a different figure, outline each figure individually with different colored pencils. (A triangle is superimposed upon a rectangle. )

   b. Given a model figure which is superimposed upon several other figures, outline the designated model figure. (Given a triangle, circle, cross figure, outline the circle.)



   c. Given increasingly complex patterns of superimposed figures, outline the designated object.

8. Form-Constancy. Child can locate IDENTICAL figures in increasingly complex situations--Given a drawing of similar figures which are superimposed, outline all the figures of one particular form. (Given a drawing of superimposed circles and ovals, outline only the ovals.)

F. Number

1. Cardinal Number

   a. Child understands cardinal numbers when he is able to

      1) Construct a one to one correspondence between two sets of objects.

      2) Conserve this correspondence when it is no longer perceptually obvious.

   b. Given a set of domino cards, one being a starting card, select a card with the correct number of dots to match the starting card, name the number of spots, and place the card properly next to the starting card.

   c. Given three dissimilar objects, two having the same number of parts, the other many fewer or many more parts, select the two that have the same number of parts.

   d. Given a quantity of objects and a direction to group a certain number of the objects, count out and separate the number indicated.

   e. Given an image of himself in a mirror, state the number of different parts of his body (two eyes, one mouth, etc.).

   f. Given one to five objects in a set compactly arranged, name the number of objects without counting. Begin with recognizing a set of one and build to a set of five.

   g. Given a set of more than five objects, indicate the number of objects by naming the corresponding number.

2. Ordinal Number--Child understands ordinal numbers when he is able to

   a. Arrange in a sequence a set of objects which differ in some aspect (seriation).

   b. Construct a one to one correspondence between two sequences of objects in which the elements of the sequences correspond because they have the same relative positions in the sequences (serial correspondence).

   c. Conserve a serial-ordinal correspondence when it is no longer percetible.

   d. Conserve an ordinal correspondence between two sequences of objects.

      1) Find an object in an unordered set (but a set which is capable of being ordered) which corresponds to a given object in an ordered set.

      2) Arrange a sequence of objects and construct a serial correspondence between two sequences.

3. Number Terms

   a. Given one of a pair of items, select from a group of items the other member of the pair. Pairs may include symmetrical items (right shoe, left shoe) or two identical items (candle sticks).

   b. Given a group of objects, separate from the group on oral direction: A FEW, SOME, MANY, ALL, NONE. State that few, some and many do not name specific numbers of objects.

   c. Select the appropriate coin from a group of four: a penny, nickle, dime and quarter as an oral directive is given.

G. Sequence

1. Child arranges events according to their sequence in time.

    a. After child hides some objects, name which item was hidden first, which was hidden next and which was hidden last. Start with two objects and progress to several.

    b. Given a story, indicate what is the beginning, middle, and end.

    c. Arrange a series of pictures in order to match the sequence of a story.

    d. Construct a sequential drawing recalling scenes in the proper order to retell a story.

    e. Carry out a sequence in pantomiming a familiar story or rhyme.

2. Child follows a path indicated by signs or verbal direction.

    a. Given a path with various branches drawn on the floor, having a visual marker at certain points, move along the path to a point specified verbally.

    b. Given a matrix drawn on the floor, walk across rows, up and down columns, etc., according to visual patterns and verbal instructions.

    c. Given a two-dimensional model or a map with pathways marked, trace a path with a finger, to a visual marker or to place specified verbally.

H. Size relationship

1. Child indicates whether two objects are the SAME size or DIFFERENT.

    a. Superimpose one figure for another and state whether they are the same size or are different.

    b. Given three dissimilar objects, two being the same size, select the two that are the same size.

    c. Given an array of sticks of various lengths, circles of various diameters, or solid geometric figures, select the one that is the same size as a model. Eventually the child should be able to select a matching item without trial and error.

2. Child arranges articles according to increasing-decreasing size.

a. Given a set of similar objects differing only in size, put them in order from the smallest to the largest.

b. Given an incomplete sequence of sized articles and the missing articles, place those articles in the sequence without trial and error.

3. Child identifies and applies terms dealing with size relationships.

a. Given a set of objects, separate the set into two groups, one showing MORE, one showing LESS and state which shows more, which shows less.

b. Given two objects differing only in length, select the LONG one and the SHORT one on oral direction.

c. Given two objects differing only in size, select the one which is LARGE and the one which is SMALL, on oral direction.

d. Given a set of similar objects differing only in size, select the SMALLEST member and LARGEST member of the set.

e. Given two like objects differing only in height, select which is TALL and which is SHORT on oral direction.

f. Given three objects differing only in height, select the SHORTEST and the TALLEST.

g. Given a set of objects, separate from the group on oral direction A FEW, ALL, SOME of the objects, and state the term while separating the objects.

h. Given objects having equal height or length but unequal cross-sections, select the THICK object and the THIN object on oral directions (two posts of equal height but different cross-section; which is thick and which is thin?)

i. Select the bigger of two similar objects.

j. Given a set of objects illustrating two size dimensions, select the correct block on oral direction. [Given a set of nesting blocks (which differ in two dimensions) select the block which is LARGEST and TALLEST; the one which is SMALLEST and SHORTEST.]

k. Given two objects differing in size and the question, 'How are these (dogs) different?', state that one is (large) and the other is (small). This applies to the other size concepts: (LONG, SHORT, TALL, THICK, THIN).

I. Spatial Arrangement

1. Child identifies and applies spatial terms.

   a. Given a box, place a block AROUND, IN, ON, UNDER, OUT, OVER, BESIDE, TO THE RIGHT, TO THE LEFT, NEXT TO the box after oral instruction.

   b. Using the floor as a base, place a block HIGH in relation to the floor and another block LOW.

   c. Given two boxes, place a block BETWEEN the two boxes after oral direction.

   d. Find a location described in terms of its positional relation to other objects.

   e. Describe a location by stating its position in relation to other objects (NEAR, ABOVE, BELOW, LEFT OF, etc.).

2. Child discriminates between right and left.

   a. Given a direction, raise the correct hand, right or left.

   b. Turn to the right and left upon command.

   c. Identify own right and left hands and feet by naming them while touching them.

   d. Identify the right and left hand (foot) on another person in various positions in relation to child.

   e. Given two objects (gloves) placed before him, identify the right-handed and left-handed objects.

   f. Given two objects placed before him, state which object would be on his right (or left) if he were on the other side.

3. Child reproduces patterns of spatial arrangements.

   a. Given a model, reproduce familiar patterns using doll furniture, toy cars, dishes, etc. (Reproduce a model of a place setting.)

   b. Given a model of a familiar pattern (dish place setting), reproduce the pattern by drawing approximate shapes on a map.

4. Child identifies objects in various spatial perspectives.

   a. Given an array of objects and an array of pictures of those objects, in various perspectives, match pictures with corresponding objects.

b. Given a sample drawing plus examples of the same drawing in other positions (including reversals and mirror images), select the example that matches the sample.

c. Given a picture of a person and an object he is looking at, select from other pictures the view of the object as seen by the person in the picture.

5. Child hypothesizes on the basis of spatial clues.

a. Predict which figures will exactly fit an outline drawing.

b. Predict whether lines will touch when extended.

J. Time

1. Child identifies and applies time related terms.

a. Given pictures of objects denoting different ages, select the object (person, animal) that is youngest or oldest.

b. Given a set of age-dimensional objects, select the oldest (or youngest), and then from another group of items, select the object which belongs to the oldest. (Select the grandfather and a cane as the item which belongs to the grandfather.)

c. Given occurrences in relationship to a bell ringing, state which occurrences took place BEFORE the bell and which took place AFTER the bell in answer to direct question. (What happened after the bell?)

d. State activities that occurred during a specified day as teacher names day in terms of TODAY, YESTERDAY, and TOMORROW. (Name something we did yesterday.)

e. Given situation depicting the three relationships to a specific item: ON TIME, LATE, EARLY (Three children arriving at a spot--one before a bell, one with a bell, one after a bell), state which example illustrates ON TIME, which illustrates LATE and which illustrates EARLY.

f. Given two occurrences in relationship to a bell, state whether a named occurrence took place BEFORE or AFTER the bell. (When did the girl come to the door? BEFORE the bell.)

g. Given an occurrence that has happened, is occuring, or will happen, state whether the occurrence took place TODAY, YESTERDAY, or TOMORROW. (When did we plant seeds?)

h. Given a situation where the child completes a task (arrives at a door, finishes cutting out a figure) in relationship to a bell, state whether he finished ON TIME, EARLY, or LATE.

i. Given pictures of night and day scenes, label them either NIGHT or DAY.

2. Child hypothesizes based on time concepts.

a. Given illustrations of the first two segments of a sequence (a glass sitting on a table, a glass partly tipped), select from other illustrations, the last segment of the sequence (the glass's contents spilled).

b. Given two examples of time related actions (burning down of a candle, burning down of match), select the one which would take longer.

K. Weight

1. Given a series of different weighted objects, arrange them in order by weight.

2. Given two different weighted but otherwise identical objects, and the question 'How are they different?', state that one is HEAVIER than the other, the other being LIGHTER than the first.

III. TACTILE DISCIMINATION

A. Child distinguishes between objects by touch.

1. Given an array of fabric samples, pair identical samples while blindfolded.

2. Blindfolded, match plane and solid geometric figures, or complete a simple puzzle.

3. Given an object, name it blindfolded.

4. Given an array of objects which the child can touch but not see, and another array which he can see but not touch, match the objects.

5. Moving about a room blindfolded, touching things as he goes, describe where he is.

B. Child identifies and applies tactile terms.

1. Temperature

a. Given two glasses of water of different temperatures, state which is WARMER, which is COLDER after touching.

  - b. Given a series of containers of water ranging in temperature from FROZEN to COLD to WARM to HOT, arrange them in sequence.

  - c. Given the above series, label orally with the appropriate word.

  - d. Select clothes for a doll to suit the weather and tell why the doll needs them on that particular day.

2. Texture

  - a. Given an object which is HARD and one which is SOFT, select the correct object in response to a question, 'Which one is HARD (or SOFT)?' Child is blindfolded. (Also for ROUGH-SMOOTH)

  - b. Given two objects differing in texture, state how they are different using the terms HARD, SOFT, ROUGH, SMOOTH.

3. Presented with an array of objects, select a particular object when it is defined by a tactile characteristic instead of its name. (For cotton, 'Name something that will feel soft.') The child is not allowed to touch the objects presented.

4. Given no sensory stimulus, only a verbal problem (How would a piece of cotton feel different from a marble ?), state verbally how the objects would feel using tactile terms.

Part 2: HIGHER ORDER COGNITIVE ACTS

I. MEMORY TASKS[1]

A. Recognition

1. Shown an object, the object then being removed from sight and then presented in a group with two new objects, select the original object.
2. Given a question and a choice of two phrases for an answer, state the phrase that is the correct answer. (Where do you live? In a house or in a tree?)
3. Shown a picture which is then removed, select a matching picture from an array.
4. Shown a set of objects which are removed and presented again with a new set of objects, select the original set of objects.

B. Recall

1. Immediate response tasks

    a. Verbal

        1. Repeat a sequence of words (cat, dog, house, tree).
        2. Given a sequence of digits, repeat the sequence (3, 5, 6, 2).
        3. Given a story recall the sequence and direction of events.
        4. Answer questions regarding a familiar poem or story. Questions should include who, what, where and when questions. (Does the story tell about grown-up people, children, animals, or things?)
        5. Given a three paragraph story, the paragraphs increasing in complexity, answer a question after each paragraph and recall the title of the story at the end.
        6. Given a story with a repetitive refrain, join in stating the refrain.
        7. Given a sentence, repeat it. Sentences can be made successively more difficult. (From 'Dogs bark' to 'If the ground is wet, the children will not be able to play in the park.')
        8. Child is shown an array of objects; while he is not looking, one is removed; the child must then tell what is missing. Begin with one object and build to nine or ten objects.

b. Motor

1. Copy from memory a row of adjacent different objects shown for five seconds per trial by reproducing the arrangement from his own supply of objects. Performance criterion is one perfect reproduction in not more than two trials.

2. Given an object with considerable detail (a house), copy the several details in a situation in which he cannot view model and his own work at the same time.

2. Delayed response tasks

a. Reproduce a pitch or other sound after a delay.

b. Given five possible hiding positions (house with five doors), an object being placed behind one of the positions in view of the child, remember the position, name it and find the object after a one, two, four, and eight minute delay.

C. Information Coding

1. Child codes information in order to remember it.

a. Given a number of objects to remember (two animals, a dog and cat; two tools, a hammer, a screwdriver), group them into categories and then recall members of each category in sequence.

b. Given an object to remember, name it and use the name as an aid in recall. (Girl: Sandy, she has sandy-colored hair.)

c. Construct or learn a poem, rhyme, or other easily remembered nemonic to aid in recall. (One, two, button my shoe; three, four, shut the door.)

2. Child uses strategies for memorizing.

a. Recite material in a fixed rhythmic pattern, or set it to tune to increase the number of 'cues' for recall. (ABC song.)

b. Separate material to be memorized into several related classes. (1, 2, 3 are numbers; A, B, C are letters.)

c. Identify items most likely to become confused with one another and pay extra attention to those subsets in memorizing. (1 and 7 are alike except for the hook in seven.)

3. Acquisition[2]--Given four objects arranged, in successive trials, in all the possible orders, the object in one of the positions always being the correct answer, select that position for his answer to the question 'What object am I thinking of?' after three trials and continue answering by naming that position for three more trials.

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[1] Here we have not distinguished between rote and meaningful understanding of memory tasks, although we recognize that considerable difference exists both in the difficulty and the kinds of behaviors which would be involved.

[2] Although acquisition is usually considered a learning process distinct from memory processes, we have listed this as a memory skill since we feel acquisition can be related to similar basic cognitive operations.

II. QUANTITATIVE SKILLS

A. Child can distinguish between objects by measurement.

1. Visual transfer

    a. Given two rods (or other objects) state whether or not they are equal in length.

    b. Given two rods held together, state which is longer, which is shorter.

2. Manual transfer--Given two rods, held together, state whether or not they are equal in length.

3. Body transfer--Given two rods, determine the length of one rod by using the distance between hands, or marking a point on the body where the object reaches, compare this to the length of the other object and state whether the two are equal in length.

4. Unit iteration

    a. Given two lines which the child must compare for length and which he cannot superimpose, find a rod exactly equal in length to one of the lines, compare the rod with second line, and state whether the two lines are equal.

    b. Given two lines to compare, find a rod longer than line A, make a mark on the rod to indicate the length of A, then use the marked rod for comparison with line B, and state which is longer, line A or line B.

c. Given two lines to compare, use a rod considerably shorter than line A and step along it counting the number of steps made; then step the same rod along line B, and compare the number of steps. State which is longer.

5. Length no longer determined by end points, but by configuration of material between the end points--Given two sets of two objects which mark out an equal distance, the corresponding objects being directly opposite each other, and a straight path between one pair and a zigzagged path between the other pair, state that the straight path is the shortest.

B. Child can use numbers.

1. State his age in years; state his birth date.
2. State how many objects are in a set (including the empty set).
3. Given a cardinal number (9) and a set of small identical objects (disc counters), place the same number of objects below a number as the given number names.
4. Given an ordered set, identify the first, second, third, etc., items.
5. Read and write one-digit and multi-digit numerals from one to twelve.
6. Match numerals with sets of the appropriate number.

C. Child can see the relationships of sets.

1. Given two sets of objects, state whether the sets are of equal size.
2. Given two unequal sets, state which has more (fewer) objects.
3. Given an array of sets of various sizes, order them from smallest to largest.
4. Identify an empty set as a set containing no objects. (How many children have three legs?)
5. Given a set, partition it into two more subsets and state that the subsets are smaller than, and belong to, the major set.
6. Given a set of objects (one to four members), locate the set verbally, name the objects in the set, and name the number of objects.

7. Given two or more sets, combine them to form a larger set and state that the original sets were smaller than the combined set.

III. SERIATION TASKS

A. Seriation. Child arranges in a sequence a set of objects which differ in some attribute.

1. Given ten objects (rods) all which have the same square section but vary in length, arrange them according to their length.

2. Given ten objects (blocks) which have the same square section but vary in height, arrange them according to their height.

3. Given ten objects of the same height but varying in diameter, arrange them according to their diameter.

4. Given an incomplete set of 'size-graded objects', build a 'stairway'. When stairway is completed and child is presented with the rest of the set of size-graded objects, insert them where they belong in the stairway.

5. Given a set of size-graded objects, with missing members on either end, construct the series, and when given the missing members, add them to the appropriate ends.

B. Serial Correspondence. Child constructs a one to one correspondence between two sequences of objects in which the elements of the sequences correspond because they have the same relative positions in the sequence.

1. Given two sets of size-graded objects that are related (circles and sticks to make balloons), order the two sets on the basis of size and then construct the one to one correspondence between the two sets (make the balloons).

2. Given two incomplete sets of size-graded objects that are related (paper sails and boats), build a sequence of the paired objects based on size. When the sequence is completed and the child is presented with the rest of the size-graded pairs, insert them where they belong in the sequence.

C. Multiple Seriation. Child arranges in a sequence a set of objects which differ in more than one attribute.

1. Given a set of objects graduated in height and diameter (nesting cans) place them in proper graduated order without having to resort to trial and error experimentation.

2. Given a set of objects graduated in height or diameter and in color hue (dark red-light red), arrange them in the proper sequence.

3. Given an incomplete set of objects graduated in more than one attribute (length, height, diameter, color, shape, number of sides, etc.) seriate them and when given the missing objects, add them to the series without having to revert to trial and error experimentation.

4. Given an incomplete set of objects graduated in more than one attribute and missing members from either end of the series, construct the series and when given the missing objects, add them to the appropriate ends of the sequences.

IV. CLASSIFICATION

A. Child classifies objects considering an increasing number of dimensions.

1. Developmental Sequence

    a. Consistent Sorting. Given a mixed array of objects, select objects alike in some perceptual feature.

    b. Resemblance Sorting. Given one object that is part of a pattern and two other objects (one, part of the pattern, but not resembling the first in shape or color), select which of the second two objects is like the first, and supply the reason for matching in that way. A successful sorter matches on the basis of form, color, or some perceptual property.

    c. SOME and ALL. Given a set of objects differing in color and shape, [six blue figures (four boxes, two balls), six red figures (all boxes)] and questions testing understanding of SOME and ALL answer correctly. (Are all of the reds boxes? Are all of the boxes red? Are all of the balls blue? Are all of the blues boxes?)

    d. Whole is the Sum of its Parts. Given a set of square blocks, two of one color, six of another color, two statements describing the whole-part relationship and the question as to which is correct (Could the highest tower be made from putting all the red and blue blocks together or by putting all the blocks together?), state that both answers are correct and supply the reason why.

    e. Conservation. Given a group of nine objects (triangles) differing in color only, piled and labeled with a nonsense syllable (mef), state that all the objects are still called by the nonsense syllable (mef) under the three conditions:

1) After the objects are scattered across a table.

2) After the child constructs a pattern with the objects and one is then removed.

3) If the teacher should take one of the objects home.

f. Inclusion, Subordinate Class, Subclass. Given a set of objects differing in color and shape, six blue objects (four boxes, two balls), three red balls , answer questions concerning the number of objects in different classes. (Are there more blues or boxes? Are there more reds or balls? Are there more balls or blues?)

2. The child uses the terms SAME and DIFFERENT correctly.

a. Given an array of objects, select those that are the SAME.

b. Given two objects, state how they are the SAME in a complete sentence.

c. Given an array of objects differing in shape and color, choose an object and put it in a box along with all the others that are 'like it'. Child should consistently use an attribute to select 'like' objects.

d. Given an array of objects most of which are identical, select the ones that are DIFFERENT.

e. Given two unlike objects (a circle and a square), state that they are not the same, they are DIFFERENT and tell how they are DIFFERENT.

3. Child sorts objects based on one dimension.

a. Given an array of objects which differ in only one attribute (color, function, texture, etc.), sort them into separate categories on the basis of that attribute (all red balls and blue balls).

b. Given an array of objects which differ in more than one attribute (shape, size and color), sort them on the basis of those attributes. Then re-sort the entire array on the basis of a different attribute.

4. Child sorts objects based on two dimensions.

a. Given a set of objects differing in only two properties, group the objects based on the properties represented (red chairs, blue chairs, red balls, blue balls).

   b. Given an array of objects which differ in more than two attributes, sort them on the basis of two of the attributes present. (If objects differ in color, shape and size, sorting could be in terms of color and size only.)

5. Child does hierarchical sorting.

   a. Given an array of sorted articles, state the basis on which the articles were sorted; the articles then being resorted. Can be repeated several times.

   b. Given an array of items which differ in several dimensions, sort on one dimension. Then take each class and sort it, separately from the other classes, on a second dimension. (Given a set of dishes, sort them by function: cups, saucers; then take the cups and sort by color.)

6. Child uses verbal description to guide classification.

   a. Given a verbal description of a class, sort an array of objects into the described class. (Sort the blocks by color.)

   b. Given a verbal description of several classes, sort an array of objects into the described classes. (Sort the blocks by shape and then by color.)

7. Child gives verbal descriptions of classification systems.

   a. Given an array of objects sorted into several classes, describe the basis of classification. (These balls are red; these balls are blue.)

   b. Given an array of objects of one class (tools) sorted into several classes (color, shape, function), state the basis for the overall class and the subclass.

8. Child selects dimensions for sorting.

   a. Apply the rule for telling whether or not complex figures are the same by selecting those that have the same parts, stating what parts are the same (a set of 4-wheeled vehicles).

   b. Given an array of objects, choose orally the dimensions on which to classify and then sort the objects based on the dimensions specified.

   c. Given an array of objects and four containers, classify the objects into four groups and explain why the objects are separated in a particular way. Child must use all the objects in the classification.

B. Child classifies objects that become progressively more abstract.

1. Given actual sized, three-dimensional facsimiles of objects, classify them on the basis of common, simple properties (red balls and blue balls).

2. Given realistic miniatures of objects, group them on the basis of commonly held properties (different sexed dolls).

3. Given colored photographs, classify them on the basis of common properties.

4. Given black and white realistic pictures, classify them on the basis of common properties.

5. Given silhouettes of objects, group them on the basis of commonly held properties.

6. Given stylized miniatures, not realistic but definitely representative of properties that identify the object, group them on the basis of commonly held properties.

7. Given black and white line drawings, group them on the basis of commonly held properties.

8. Given impressionistic drawings having minimal visual clues, group them on the basis of commonly held properties.

C. Child classifies objects on different bases.

1. Child classifies object by use or function.

   a. Given a group of functional objects, group them by their function (broom and vacuum clearner;) glass and cup).

   b. Given a group of objects, select those that would be appropriate for a set of objects based on use or function (things that tell time).

   c. Given some nessarily related objects (soap-towel-washbowl), grouped according to their common need in completing a function, name the function (washing your face).

   d. Given a group of objects, select those that could form a set of objects belonging together because they are used to complete a function, and name the function (bowl, holding cereal; spoon, eating cereal).

   e. Given a set of cards depicting separate objects, select those cards depicting objects which would belong to a set defined for a particular use or function, and name the use or function (glove and mitten, keeping hands warm; flashlight and lamp, seeing in the dark).

2. Child classifies objects according to number and size.

    a. Given a mixed array of objects with number properties, group according to this property. (Group all dolls having two legs.)

    b. Given an assortment of like objects differing only in size, group according to this property (large balls, medium-sized balls, small balls).

3. Child classifies objects according to their physical properties.

    a. Given one object, select another object from a set of two that is the same as the first. Objects can differ in color, size or shape, but in one characteristic only.

    b. Given three objects, select the two that are the same, one object differing in color, size and shape.

    c. Given three objects, select the two which are alike in some way (a red ball, a blue ball, a green hat).

    d. Given an object, describe orally the separate attributes of the object. (It is red, round, has a top, can hold something inside.)

4. Child classifies objects on the basis of relations and contents.

    a. Given a set of objects not clearly related in any particular way, supply a reason for why the objects are grouped in that particular way which illustrates a logical relation between the objects.

    b. Given an array of objects not clearly related, group some of the objects and supply a reason for the grouping that illuminates a logical relation between the objects grouped.

5. Child classifies objects on the basis of inferring from categories. Reasons given do not state inherent similarities in the objects grouped.

V. CONSERVATION

A. Conservation of Number

1. Child arranges objects by matching them on a one to one basis.

    a. Given a set of objects, indicate the number of objects by holding up a corresponding number of fingers.

b. Given two related sets, match the members of one set to the members of another set. (Match a set of spoons to a set of forks.)

c. Given two sets of objects, name the number of objects in each set, and state whether there is a matching item in the second set of each itme in the first set. (Given a set of spoons and a set of bowls, answer the question, "Is there one spoon for each bowl?")

d. Given two related sets of items (number of boxes and lids), state whether the one group of items has as many as another group.

2. Child arranges objects in linear order.

a. Given a complete sample of a bead pattern, string an identical pattern of his own.

1) Match up to four objects for number, all objects identical in shape, size and color. (Teacher strings two, three, or four round blue beads in a straight line; child copies.)

2) Match up objects for color and number. (Teacher strings two red, round and two blue, round beads; child copies.)

3. Match objects for shape and number. (Teacher strings one round, two red cubed, and one red round bead in a straight line; child copies. Gradually more beads and shapes are added.)

4) Match objects for color, shape and number.

b. Given a partial sample to be repeated until all the beads are used, string the appropriate beads independently. Same successive approximation outlined in first step applies.

c. Given a demonstration pattern which is soon removed from view, string an identical pattern. Same successive approximation outlinedin first step applies.

d. Given verbal instructions for a very simple pattern, but no concrete pattern, string the desired pattern. Same successive approximation outlined in first step applies.

3. Child reproduces three-dimensional constructions.

a. Given a model bridge made of three blocks, reproduce it.

b. Given a Tinkertoy or block construction, reproduce it. Same successive steps outlined with bead patterns apply here except there is no linear restriction.

4. Child identifies the equality of sets of objects even after physical correspondence is destroyed.

a. Given two glasses, one which has a top with a slit in it and covered sides, alternate dropping single beads into the two glasses and state that the number of beads in each is the same, 'Because every time I put one here, I put one there.'

b. Given two sets of objects, the members of which are moved about, state that there are still the same number of objects in the second group no matter how they are moved.

1) Child continues to identify the equality of two sets of objects even though they are displaced.

a) Given a row of objects and a second row of the same number of objects, its length parallel to the first, after matching the two rows on a one to one basis, state that there are the same number of objects in both rows.

b) Given a row of objects which is displaced laterally, state that the same number of objects remain within the row as before.

c) Given a line of objects (1) the child has counted and can supply the numerical label for, the objects then being spread out (2), state that there remain the same number of objects.

(1) xxxxxxxxxx

(2) x x x x x x x x x x

d) Given two items representing a dimensional problem (a long line and a short line), select the object named in an oral direction. (Point to the long line.) When there is added to one of the objects something superfluous which does not contradict the original statement (red circles on the long line), still select the object based on its dimension.

2) Child continues to identify the equality of two sets of objects even though they are regrouped.

a) Given a line of objects, the line being scrambled, state that there remain in the group the same number of objects as before.

b) Given two lines of objects (1) the child has counted and can supply the numerical label for, one line of objects then being scrambled (2), state that there remains the same number of objects in the two groups.

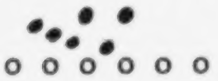
(1) x x x x x x x
x x x x x x x

(2) x x x x x x x
x x x
x x
x x

c) Given two sets of objects the child has arranged on a one to one basis proving the two sets are equal in number (1), one row then being scrambled, the other row being laterally displaced (2), state that there are still the same number of objects in each set.

(1) ● ● ● ● ● ●
o o o o o o

(2)



5. Given unequal sets of objects, the members of which are moved about, the child indicates which group has more, which group has less and maintains this viewpoint despite the moving of the objects.

   a. Child continues to recognize the inequality of rows despite lateral displacement.

      1) Given two unequal lines of objects the child has matched on a one to one basis, state which line has more objects and which has less.

      2) Given two unequal lines of objects the child has matched on a one to one basis to determine which has more and which has less (a), state the short line then being displaced laterally until the two lines are the same length (b), state that the two lines are still unequal, and point to the line which contains more members.

      a) x x x x
      x x x x x

      b) x x x x
      x xxx x

      3) Given two unequal groups of objects, match on a one to one basis, and then add the appropriate number of objects to make the two sets equal.

b. Child continues to state the inequality of two groups of objects despite one of the groups being regrouped into a different shape.

1) Given two groups of objects unequal in numbers, match the objects on a one to one basis to determine which group has the most members. The larger group then being regrouped into a smaller area, still state that it has more members without recounting and supply a reason why. (They are the same as before.)

2) Given a collection of objects having a major attribute in common but differing in other attributes (fruit: oranges, bananas, etc.), state there are more objects having the major attribute (fruit) than objects having more specialized attributes (oranges).

6. Given two groups of objects equal in number, the same number of objects being added and subtracted from each, state that the two groups are still equal.

B. Conservation of Quantity and Related Concepts

1. Conservation of identity of quantities.

a. Given a beaker of liquid the contents of which the child has identified (orange juice), the liquid being poured into a second container, state that the liquid is the same and give a reason why that indicates understanding.

b. Given two beakers of liquid the contents of which the child has identified as being the same (orange juice), the contents of one of the beakers being poured into a third beaker, state that the contents of the two beakers remain the same.

2. Child states that discontinuous quantities whose equality has been established remain equal despite changes in containers.

a. Given two different containers with an identical capacity, one of which is filled with a discontinuous quantity (pebbles, beads, seeds, etc.), predict the quantity level in the second container after pouring from the first container.

b. Given two large containers and two small containers, the sum capacity of which equals one of the large containers, the child agreeing that the discontinuous quantities in the two large containers are equal, pour the contents from one of the large containers into the small containers and state that the amount in the two small containers is the same as the amount in the remaining large one.

c. Given two identical beakers equally full of a discontinuous quantity, one beaker being poured into a taller, thinner container, state that the amount in the taller, thinner container equals that in the remaining beaker and explain why.

3. Child states that continuous quantities whose equality has been established remain equal despite changes in containers.

   a. Given two different containers with an identical capacity, one of which is filled with water (a 12 oz. juice can and a 12 oz. Coke bottle), predict water level in the second container after pouring from the first container.

   b. Given two large containers and two small containers, the sum capacity of which equals one of the large containers, the child, agreeing that the continuous liquids in the two large containers are equal, pour the contents from one of the large containers into the small containers and state that the amount in the two small containers is the same as the amount in the remaining large one.

   c. Given two identical beakers equally full of colored water, one beaker of water being poured into a taller, thinner beaker, state the amount of liquid in the third container (the taller, thinner beaker) equals that in the remaining beaker and explain why.

C. Child states that lengths or distances remain equal whether or not they are relocated in space.

1. Given two straight objects of equal length placed together, child stating that they are equal in length, one object being moved laterally, state that the two objects remain equal in length.

2. Given two sets of two objects functioning as end points for parallel and equal distances which the child states are equal (a), one of the pairs of end points being moved laterally (b), continue to state that the two objects remain equal in length.

a. x - distance - y b. x - distance - y
o o o o

o - distance - o x - distance - y
w z o o

D. Child states that objects remain equal in weight if they do not lose mass.

1. Given an object (a plasticine ball), a piece being taken from it, state that the ball now weighs less than it did.

2. Given an object (a plasticine ball) which is flattened out, state that it still remains the same weight it was.

3. Given two objects (plasticine balls) which are weighed on a balance in front of child and labeled equal in weight, a piece being taken from one of the objects, state that the two objects do not now weigh the same and name the heavier object.

4. Given two plasticine objects which are weighed on a balance and proved equal in weight, one of the objects being changed in form (flattened out as a pancake), state that the two objects continue to weigh the same.

E. Child states that figures of equal area remain equal whether or not their outlines are changed.

1. Given a sheet of paper which is cut in half and placed end to end, state that the area of the paper remains the same.

2. Given two sheets of paper equal in size and shape, one of the sheets being cut in half and the two pieces being placed end to end, state that there is still the same area of paper in the two figures.

3. Given two clay balls the child has made equal in volume, one of the balls then being reformed into a hot dog or pancake, state that the two pieces of clay are still equal in volume.

F. Child states that figures of equal volume remain equal whether or not their outlines are changed.[3]

1. Given a plasticine ball that is first round and then changed in form, state that the volume of plasticine remains the same.

2. Given an object (a plasticine ball) which is flattened out, state that it still remains the same weight it was.

3. Given two objects (plasticine balls) which are weighed on a balance in front of child and labeled equal in weight, a piece being taken from one of the objects, state that the two objects do not now weigh the same and name the heavier object.

G. Child interprets what he sees relative to a particular visual perspective.

1. Given a pattern, make a 90° transformation from the scene and reproduce the pattern. (Given a simple place setting, a plate, knife, fork and cup on one side of a table, set up an identical place setting one quarter of the way around the table.) Progress to a 180° transformation across the table. Child should devise his own means of remembering 'where things go'.

2. Estimate the relative size and distance of two objects in various perspectives (both large, one close and one far; one large and one small, both far).

3. Given one view of an object and several other views of objects from various orientations (front, back, side, top, bottom, various angles, and distances, etc.), identify which views are other views of the original object and which are different.

4. Given a mirror image and a direct image of an object, select the direct image of the object.

[3] Volume conservation can involve considerably more complex behavioral achievement than this as children grow older. Specifically three more advanced volume concepts are, in Piaget's terms, internal volume, or the amount of space within a container, occupied volume, or the amount of space in a container with additional subjects in it, and compensatory-displacement volume, or the effect on the level of liquid in a container when a solid is placed therein.

VI. PROBLEM SOLVING

A. Logical Reasoning

1. Child infers through recognizing size relationships in solving problems.
   a. Given a larger opening that both vehicles can pass through, the large vehicle actually going through, state that the smaller vehicles can pass through because it is even smaller than the one that did pass.
   b. Given two vehicles of different sizes and an opening too small for either, the smaller of the vehicles is moved to the opening and cannot pass through, state that the other will not be able to go through either because it is even bigger than the vehicle that did try.
   c. Having stated that A object is greater than (or less than) B object, and B object is greater than (or less than) C object, state that A object is greater than (or less than) C object. (Logical Transitivity)
2. Child completes short term sequences so they remain consistent with clues that have been given.
   a. Given sequence cards (an apple being gradually eaten), arrange the cards in the appropriate order.
   b. Given an incomplete sentence, a word missing from the end of the sentence, supply the missing word. (This morning I came to ______________________.)

c. Given an incomplete sentence, a word missing from the middle of the sentence, supply the missing word. (The ____________________ tells time.) The statement of the sentence should not indicate where the missing word fits in.

3. Child infers through creating, selecting and/or rejecting solutions to hypothetical problem situations.

   a. Given a problem with a variety of possible solutions, select the one best suited to the situation. (If you are hungry at school, whom would it be best to ask for food--a friend, your mother or a teacher?) Justify the response given.

   b. Given a problem, orally explain why a particular action is not appropriate. (If we want to play with the ball, why would we not put it away in the closet?)

   c. Given a picture and a problem that is stated orally (Johnny wants to eat one of those cookies up there), the picture including clues to the solution of the problem, state the solution to the problem.

   d. Given problems stated in increasingly abstract terms, answer them in such a way that the response signifies comprehension of the problem.

      1) Level I. What must you do when you are thirsty? Why do we have stoves?

      2) Level II. Why do we have houses? Why do we have books?

      3) Level III. What do we do with our eyes? What do we do with our ears?

      4) Level IV. What should you do if you found on the streets of a city a three-year-old baby that was lost from its parents? What's the thing for you to do when you have broken something that belongs to someone else? What's the thing for you to do when you are on your way to school and see that you are in danger of being late?

   e. Given a problem, suggest more than one practical solution to the problem. (Overalls that have lost a button--a new button can be sewn on; a safety pin can be used, etc.)

4. Child infers by logical inclusion or exclusion.

   a. Child identifies the one that is different in an array of items or incidents.

      1) Given a drawing of three like forms and one different form, select the one that is different.

      2) Given a drawing of three like forms and one different form, state how the unlike form is different.

   b. Inclusion: Given a description of an object and an array of possible objects that fit parts of the description, choose the best answer. (I am round and red, can be eaten, and grow in a tree: a ball, tomato, catsup, an apple?)

5. Child identifies cause and effect.

   a. Given a series of absurd pictures, tell what is wrong with each (cat and mice playing together).

   b. Given a sequence of cards depicting a cause and effect (a batted ball resulting in a broken window), arrange the cards in the appropriate order.

   c. Given a cause in a story, state the effect. (Three Little Pigs: Wolf blew on the house of straw--it fell down.)

   d. Given a cause, supply the probable effect. (A child with a cookie--probably eats it.)

   e. Given an effect, supply a probable cause. (A broken glass--because it was dropped.)

6. Child can solve problems involving patterns.

   a. Given a small-scale picture of a tile design, construct the design using large tiles.

   b. Given a picture of three-dimensional construction, and the necessary materials, produce the appropriate construction.

   c. Given a string of beads or a three-dimensional construction that repeats itself in two or more sections, add one more section that duplicates the pattern.

   d. Given a recurrent pattern of flashing lights, predict which light will flash next.

7. Child can solve problems dealing with analogies.

   a. Given familiar polar discriminations that become increasingly more abstract, answer them correctly in a complete sentence. (Brother is a boy; sister is a ____________.)

b. Given an incomplete analogy, complete it. (I sit on a chair; I sleep on a ________________.)

B. Problem Attack

1. Child mediates his own problem solving activity.

   a. Ask self questions orally.

   b. State rules to self orally.

   c. State a logical deduction to self orally.

2. Child chooses materials to be used in problem solving based on the attributes of the problem.

   a. Given familiar objects (house, window, book), state what they consist of.

   b. Sort objects according to possible function in solving a problem. (To make a drawing, paper and a marking instrument will be needed, not scissors.)

   c. Predict possible difficulties in the use of certain materials. (In making a drawing, chalk will smear; crayon is more easily managed on the paper.)

   d. Think of unusual uses for things. (A can may be used to draw circles.)

   e. Given an abacus, solve mathematical problems dealing with everyday experience.

3. Child gathers information from various sources and selects what is relevant.

   a. Formulate questions relevant to a problem.

   b. Ask appropriate people for information.

   c. Reject irrelevant information.

4. Location of Points

   a. Child locates points in the real environment.

      1) Follow a described route, passing designated places in a designated order.

      2) Name all points that would be passed in a given route (from x to y).

      3) Orally describe a route a person has followed.

4) Given an item that has been hidden, search an entire area systematically keeping track of areas that have already been searched.

   a) Scan the general area and state whether the object is visible.

   b) Orally reduce the possibilities of where the item may be on the basis of what the item is. (A basketball could not be in a drawer.)

b. Child, using a two-dimensional map, locates points or paths on the map.

   1) Find a location described in terms of the objects there.

   2) Describe a location orally in terms of the objects at the location.

   3) Find a location described in terms of its positional location to other objects.

   4) Describe a location by stating its positional locations (near, above, below) with reference to another object.

   5) Trace a described route, passing designated places in designated order.

   6) Name all the points that would be passed taking a given route between point x and point y.

   7) Describe a route a person has followed.

c. Child, given a three-dimensional model, locates points or paths using the model.

   1) Place a doll at the point in the model where a real person is standing.

   2) Place a real person at a point where a doll is on a model.

   3) Name and point to objects in model that correspond to real space.

   4) Arrange model furniture, etc., to correspond to real-space arrangement.

   5) Trace with his finger a described route, passing designated places in a designated order.

   6) Find a location stated in terms of what objects are there.

7) Find a location stated in terms of its positional location to other objects.

8) Name all the points that would be passed in a given route between point x and point y.

9) Describe a location by stating what objects are there.

10) Describe a location by stating its positional location (near, above, below) to another object.

11) Describe a route a person has followed.

5. Child uses examples to solve problems.

   a. Given two objects or pictures, state whether they are identical or not identical.

   b. Given a model (a large red circle), select the object identical to it from an array of objects that differ considerably from the model.

   c. Given an array of objects, select the one that is different from a sample object.

   d. Given an array of objects, select the one that is different from all the objects. The discrimination task can at first be simple and become increasingly more difficult.

   e. Given a model (a large red circle), select from an array of similar items another item that is the same in one specified dimension (a small blue circle), ignoring the other dimensions.

   f. Given two non-identical examples, state how they are the same and how they are different.

   g. Given a set of non-identical examples, state what they all have in common.

   h. Given two classes of examples, state how the two classes differ.

   i. Given a problem (Are all green items the same weight?), select from an array the examples that should be studied.

6. Child tests and verifies possible solutions.

   a. Try out a given solution on original problems. (If he thinks crayon will write on plastic where paint will not hold, try it on other materials.)

b. State conditions under which a given solution could apply. (Poster paint can be used when there is no waxed surface.)

c. Given an array of objects, select the one that is different from a sample object.

d. Given an array of objects, select the one that is different from all the others. The discrimination task can at first be simple and become increasingly more difficult.

e. Given a model (a large red circle), select from an array of similar items another item that is the same in one specified dimension (a small blue circle), ignoring the other dimensions.

f. Given two non-identical examples, state how they are the same and how they are different.

g. Given a set of non-identical examples, state what they all have in common.

h. Given two classes of examples, state how the two classes differ.

i. Given a problem (Are all green items the same weight?), select from an array the examples that should be studied.

ILLUSTRATIVE MATERIALS

HOME VISITATION 1. LANGUAGE--DESCRIBING OBJECTS

I. Teaching Sequence. Behavioral Objectives

   A. Given an object, name it.

   B. Given an array, select each object named.

   C. Given a picture of a single object, name it.

   *D. Given pictures of related objects, name the object pointed to (cup and saucer, tree and plant).

   *Objective D is to be the focus of this particular illustration. All children within a group will not necessarily be at this objective in the sequence and should be given experiences at their particular achievement level within the sequence.

II. Principles of Instruction

   A. Determine Basal Behavior. Child can

      1. Recognize familiar objects.

      2. Select familiar objects when they are named.

      3. Select an object when a picture of it is given.

      4. Given an object, name it.

      5. Given an array, select each object named.

      6. Given a picture of a single object, name it.

   B. Successive Approximation

      1. Diagnostic testing indicates that the child is ready to proceed to Objective D.

      2. The lesson:

         a. Child is given a picture of a familiar object and is asked to name it (a cup).

         b. Child is given a picture of familiar object that is related to the first object and asked to name it (a saucer).

c. Child is then shown one picture containing the two objects and is asked to identify each object when it is pointed to (a cup on a saucer).

C. Immediate Feedback

1. When the child names the designated object correctly, the teacher reinforces him with praise.

2. If he names the object incorrectly, the teacher asks questions leading to his correct response.

D. Active Involvement

1. The child is identifying each picture by himself.

2. If he makes an incorrect response, the teacher, with the use of questions, leads the child to the point where he can correct his own error.

E. Progression at Own Rate--Since the learning experience is individually administered, the child is identifying the pictures of objects at his own speed.

III. Materials--Individual and combined pictures of related objects.

IV. Teaching Procedure

A. Child is given a picture of a familiar object and asked to name it.

B. Child is given a picture of an object related to the first picture and asked to name it.

C. Child is given a picture containing both objects and identifies the one that is being pointed to.

V. Evaluation--Child should be able to identify the individual and combined pictures.

VI. Follow-up

A. If the child meets the evaluation criteria, then he has completed the teaching sequence.

B. If the child does not meet the objective

1. His basal behavior should be reassessed.

2. Additional practice is needed in mastering this objective, or earlier objectives.

HOME VISITATION 2. COGNITION--CHILD CLASSIFIES OBJECTS THAT BECOME PROGRESSIVELY ABSTRACT

I. Teaching Sequence. Behavioral Objectives

A. Given actual-sized, three-dimensional facsimiles of objects, classify them on the basis of common, simple properties (red balls and blue balls).

B. Given realistic miniatures of objects, group them on the basis of commonly held properties (different sized dolls).

C. Given colored photographs, classify them on the basis of commonly held properties.

D. Given black and white realistic pictures, classify them on the basis of commonly held properties.

*E. Given silhouettes of objects, group them on the basis of commonly held properties.

F. Given stylized miniatures, not realistic but definitely representative of properties that identify the object, group them on the basis of commonly held properties.

G. Given black and white line drawings, group them on the basis of commonly held properties.

H. Given impressionistic drawings having minimal visual clues, group them on the basis of commonly held properties.

*Objective E is to be the focus of this particular illustration. All children within a group will not necessarily be at this objective in the sequence and should be given experience at their particular achievement level within the sequence.

II. Principles of Instruction

A. Determine Basal Behavior. Child can

1. Name objects.
2. Name different attributes of objects.
3. State how objects are alike and different.
4. Classify objects on the basis of three attributes.
5. State reasons for objects being classified in a particular way.

6. Given actual-sized, three-dimensional facsimiles of objects, classify them on the basis of common, simple properties (red balls and blue balls).

7. Given realistic miniatures of objects, group them on the basis of commonly held properties (different sized dolls).

8. Given colored photographs, classify them on the basis of commonly held properties.

9. Given black and white realistic pictures, classify them on the basis of commonly held properties.

B. Successive Approximation

1. Diagnostic testing indicates that the child is ready for Objective E.

2. The lesson

   a. Child names what the silhouettes represent.

   b. Child names separate attributes of the silhouettes.

   c. Child groups the silhouettes on the basis of commonly held properties.

C. Immediate Feedback

1. As the child names what the silhouettes represent, and the separate attributes of the silhouettes, the teacher acknowledges the accuracy of his statements.

2. While the child is grouping the silhouettes, the teacher reinforces the child for explaining his reasons for grouping in a particular way by giving him positive attention.

D. Active Involvement

1. The child is naming both what the silhouettes represent and their separate attributes.

2. He is selecting the dimensions for grouping and doing the grouping himself.

E. Progression at Own Rate--The grouping is done at the individual child's own speed.

III. Materials--A set of silhouettes of objects familiar to the child.

IV. Teaching Procedure

A. Child is given silhouettes.

B. Child names what the silhouette represents. (What does this picture look like?)

C. Child states the properties of attributes of the separate silhouettes. (How are these pictures alike or different?)

D. Child groups the silhouettes.

E. Child gives reasons for his grouping which indicate that he has grouped the items on the basis of commonly held properties. (Why did you group this picture this way?)

V. Evaluation

A. Child should be able to answer the initial questions.

B. Child should base his grouping of the silhouettes on their commonly held properties.

C. Child should be able to supply the appropriate reasons for his grouping.

VI. Follow-up

A. If child meets the evaluation criteria, he is ready to proceed to Objective F.

B. If child does not meet the objective

1. His basal behavior should be reassessed.

2. He might require additional experiences at Objective Level D.

3. He might require additional experience with different silhouettes at Objective Level E.

HOME VISITATION 3. MOTOR ACTIVITY -- ALIGNMENT

I. Teaching Sequence. Behavioral Objectives

A. Hold and use a crayon, then a pencil comfortably.

B. Draw a line, staying inside the boundaries of a path.

C. Fill in between lines in an outline drawing.

D. Trace, using stencil cutouts.

*E. Trace a drawing.

F. Draw straight lines between dots.

G. Complete incomplete patterns or letters.

H. Copy simple patterns or letters.

*Objective E is to be the focus of this particular illustration. All children within a group will not necessarily be at this objective in the sequence and should be given experiences at their particular achievement level within the sequence.

II. Principles of Instruction

A. Determine Basal Behavior. Child can

1. Hold a pencil
2. Follow a line with a pencil.
3. Hold and use a crayon, then a pencil comfortable.
4. Draw a line, staying inside the boundaries of a path.
5. Fill in between lines in an outline drawing.
6. Trace, using stencil cutouts.

B. Successive Approximation

1. Diagnostic testing indicates that the child is ready to proceed to Objective E.

2. The lesson

    a. Child is given a drawing having a wide black outline.

    b. Child is given instructions to trace the drawing, holding his crayon correctly.

    c. Child traces the drawing by going around it and staying. on the lines.

C. Immediate Feedback

1. As the child traces the drawing by correctly holding the crayon and staying on the line, the teacher reinforces his behavior with praise.

2. Since the line is easily distinguished, the child can see when he has slipped and marked either inside or outside the path and can correct his error.

D. Active Involvement

1. The child is tracing a drawing himself.

2. He can see his errors and can correct them.

E. Progression at Own Rate--The tracing is done by the child at whatever speed he has to work in order to accomplish the task.

III. Materials.

A. A drawing with an easily distinguishable outline.

B. A crayon.

IV. Teaching Procedure

A. Child is given a drawing and a crayon.

B. Child traces the drawing with the crayon closely following the outline.

C. Child sees his errors when his line is not on top of the outline and corrects his mistakes.

V. Evaluation

A. Child should be able to trace a drawing correctly.

B. When in error, the child should be able to correct his mistakes.

VI. Follow-up

A. If the child meets the evaluation criteria, he is ready to proceed to Objective F.

B. If the child does not meet the objectives

1. A more simple drawing might be used.

2. The teacher could help guide his hand when encountering difficult curves or turns on the drawing.

MOBILE UNIT 1. LANGUAGE -- STORY TELLING

I. Teaching Sequence. Behavioral Objectives

A. Given a picture, suggest names for the main characters and a good title for the picture.

B. Given the same picture and the beginning of the story, make up an ending to the story.

*C. Given a story, make up another one similar to it.

D. Make up an original story.

E. Tell an original story in sequence with appropriate voice and intonation.

*Objective C is to be the focus of this particular illustration. All children within a group will not necessarily be at this objective in the sequence and should be given experiences at their particular achievement level within the sequence.

II. Principles of Instruction

A. Determine Basal Behavior

1. Child can express himself in sentences.
2. Child can arrange events in sequential order.
3. Child can state the "likenesses" between two stories.
4. Given a picture, suggest names for the main characters and a good title for the picture.
5. Given the same picture and the beginning of the story, make up an ending to the story.

B. Successive Approximation

1. Diagnostic work indicates that the child is ready for Objective C of the sequence.
2. The lesson

a. Child is given model story.

b. Child answers initial questions which provide a framework for his own story.

c. Child tells own story using props which help him remember the sequence of the model story.

C. Immediate Feedback

1. As child answers the initial questions and tells his own story, teacher reinforces with praise.

2. Descriptive phrases.

3. Explanations.

4. Sequential development of ideas.

5. Introduction of characters.

6. A climax to the story.

D. Active Involvement--After the initial story, child is telling his own story, using whatever props he finds suitable.

E. Progression at Own Rate--Child tells story individually at own rate.

III. Material

A. A model story which lends itself to parallel plots and characterization.

B. Simple props to use in dramatizing the story.

IV. Teaching Procedure

A. Teacher dramatizes the story while telling it, using a few simple props. (The Three Bears: 3 bowls and spoons and chairs.)

B. Teacher asks questions requiring reflection on the story.

1. Who was in the story?

2. What did (Goldilocks) do?

3. What happened?

C. Teacher asks questions in order to produce characters and incidents in the child's story similar to those in the model story.

1. If you were going to make up a story about an animal family, who would you tell about?

2. Who might visit them?

3. What might happen?

D. Teacher reinforces the better responses to the above questions with praise.

E. Child tells own story at own rate of speed.

V. Evaluation

A. Child should be able to tell his story with only a few initial questions to get him started.

B. The story should

1. Introduce the main characters.

2. Develop in a logical order.

3. Include descriptive phrases and explanations.

4. Contain a climax and an ending.

VI. Follow-up

A. If the child accomplishes the objective by meeting the stated criteria, he is ready to proceed to Objective D, which is to make up an original story.

B. If child does not accomplish the objective

1. His basal behavior should be reassessed.

2. A more structured story-telling situation should be developed to meet his needs.

MOBILE UNIT 2. COGNITION--SERIATION TASKS

I. Teaching Sequence. Behavioral Objectives

A. Given a set of objects graduated in height and diameter (nesting cans, nesting dolls), place in the proper graduated order without having to resort to trial-and-error experimentation.

B. Given ten rods all which have the same square section but vary in length, arrange them according to their length.

*C. Given an incomplete set of size-graded objects, build a stairway. When stairway is completed and child is presented with the rest of the set of size-graded objects, insert them where they belong in the stairway.

D. Given two sets of size-graded objects that are related (circles and sticks to make balloons), order the two sets on the basis of size, and then construct the one-to-one correspondence between the two sets.

E. Given two incomplete sets of size-graded objects that are related, (paper sails and boats) build a sequence of the paired objects based on size. When the sequence is completed and the child is presented with the rest of the size-graded pairs, insert them where they belong in the sequence.

*Objective C is to be the focus of this particular illustration. All children within a group will not necessarily be at this objective in the sequence and should be given experiences at their particular achievement level within the sequence.

II. Principles of Instruction

A. Determining Basal Behavior

1. Child can distinguish between objects on the basis of size.

2. Child can follow oral direction.

3. Given a set of objects graduated in height and diameter (nesting cans, nesting dolls), place in the proper graduated order without having to resort to trial-and-error experimentation.

4. Given ten rods all of which have the same square section but vary in length, arrange them according to their length.

B. Successive Approximation

1. Diagnostic work indicates that the child is ready for Objective C of the sequence.

2. The lesson

a. Child is given a set of size graded objects (trapezoid 'boats') and sequences them according to size.

b. Child is given an incomplete set of size-graded objects (trapezoids), and orders them (like boats in a row).

c. Child is presented with the rest of the size-graded objects (at first just one, later several), and inserts them where they belong in the series.

C. Immediate Feedback

1. Child works with a partner. After the partner has constructed a series, the child checks his work; after the child has set up a series, the partner checks it.

2. The teacher double checks the final series and gives approval.

D. Active Involvement--Child is actually doing the manipulating and seriating of the objects provided for the task.

E. Progression at Own Rate--Child can be given many duplicate tasks at the particular objective level until he has mastered the task.

III. Materials--Size-graded sets of objects (house, dishes).

IV. Teaching Procedure

A. Teacher gives child a set of size-graded objects, tells him to aline graded objects, and also tells him to line them up in order. Teacher reinforces ordering by size and calls it to the child's attention. Child's partner also checks series.

B. Teacher gives child an incomplete set of size-graded objects (rectangular rods), and tells him to put them in order ('build a stairway'). Both partner and teacher check the series.

C. Teacher gives the child the missing size-graded object and tells the child to point to where it fits in the series. (Where does this fit in the stairway?) Child checks his own response by trying the object in the position he has indicated.

D. Repeat, leaving more objects out of the series each time.

V. Evaluation--Child should be able to add additional members to an incomplete series without needing to resort to 'trial-and-error' experimentation.

VI. Follow-up

A. If the child accomplishes the objective by meeting the stated criteria, he is ready to proceed to Objective D, which is to order two sets of objects on the basis of size and then construct a one-to-one correspondence between the two sets.

B. If child does not accomplish the objective

1. His basal behavior should be reassessed.

2. He should be given additional experiences in simple seriation tasks or additional experiences with adding one missing member to a series.

MOBILE UNIT 3. MOTOR ACTIVITY--PARTICIPATING IN SINGING ACTIVITIES

I. Teaching Sequence. Behavioral Objectives

- A. Sing spontaneously when playing.
- B. Respond with actions to a song sung by others.
- C. Given a game including a chant, use the repetitive chant as the action is performed.
- D. Given a song, clap hands to its rhythm.
- E. Join in with an occasional word or phrase as another sings.
- *F. Given a record or song which requests verbal participation, join in at the appropriate parts.
- G. Sing with an adult or group but not always in time with them or using the same words.
- H. Sing along with adult or group matching tones.

*Objective F is to be focus of this particular illustration. All children within a group will not necessarily be at this objective in the sequence and should be given experiences at their particular achievement level within the sequence.

II. Principles of Instruction

- A. Determine Basal Behavior
    1. Child can sing along with others.
    2. Child can follow directions.
    3. Sing spontaneously when playing.
    4. Respond with actions to song sung by others.
    5. Given a game including a chant, use the repetitive chant as the action is performed.
    6. Given a song, clap hands to its rhythm.
    7. Join in with an occasional word or phrase as another sings.

B. Successive Approximation

1. Diagnostic work indicates that the child is ready for Objective F of the sequence.

2. The lesson

a. Child hears a record or song which tells him when and how to participate.

b. Child follows the directions of the record or song, and repeats a refrain or answers questions.

C. Immediate Feedback--As child listens to the record or song, he is reinforced by being able to answer the question or to repeat a refrain correctly.

D. Active Involvement--The child is following the record or song and doing whatever it is asking him to do.

E. Progression at Own Rate

1. Adequate time is permitted the child in order to respond to the directions.

2. The record or song can be halted to allow additional time.

III. Materials--A record or song which permits active involvement of the child.

IV. Teaching Procedure

A. Teacher leads the song or sings along with the record, clearly enunciating and dramatizing the song throughout.

B. Teacher makes it explicit when the child is to become actively involved, perhaps by motioning to him.

C. Child participates at the appropriate time by either answering the questions in song form or repeating a refrain. He will have to be attentive throughout in order to know when to join in.

D. Teacher reinforces the child's responses with praise.

E. Child is given enough time to participate at the appropriate places.

V. Evaluation--Child should be able to join in at the appropriate places with the correct responses.

VI. Follow-up

A. If the child accomplishes the objective by meeting the stated criteria, he is ready to proceed to Objective G which is to sing along, but not always using the same rhythm or words as the instructor.

B. If the child does not accomplish the objective

1. His basal behavior should be reassessed.

2. A similar but simpler exercise should be initiated.

TELEVISION 1. LANGUAGE--PHRASING SIMPLE POLAR DISCRIMINATIONS

I. Teaching Sequence. Behavioral Objectives

*A. Given two objects describable by polar opposites, state, "This (line) is (long); this (line) is not (long)," while pointing to the appropriate object. [Polar qualities include long-short, hot-cold, big-little, soft-hard, fast-slow, fat-skinny, tall-short, dark-light, straight-curved, smooth-rough, heavy-light, loud-soft, here-there, up-down, full-empty, few-many, early-late, summer-winter, day-night, etc.]

*B. Given two objects, one being pointed to, answer the polar question, "Is this (line) (long)?" with a full statement, "Yes, this (line) is (long)."

*C. Given the question, "What can we say about this (line)?" while one of a pair of polar attribute objects is being pointed to, answer, "This (line) is (long)," or "This (line) is not (long)," as fits the polar qualities of the situation.

*These are the objectives being taught in this lesson.

II. Principles of Instruction

A. Determine Basal Behavior. The majority of children watching the program must be able to

1. Maintain attention for the majority of the program.
2. Follow oral directions.
3. Use singular identity statements correctly.
4. Use the NOT statement correctly.
5. Identify objects on the basis of their polar qualities.
6. Name the polar attributes of objects.

B. Successive Approximation

1. Diagnostic testing during the home visitation and mobile unit visitation indicates that the majority of children have the basal behaviors necessary for embarking on this particular learning sequence.

2. The lesson

   a. Teacher presents pairs of objects representative of opposite polar attributes and the model singular identity statement or the NOT statement which applies, and the child repeats them.

   b. Child then repeats the statements while one of the objects is being pointed to, the teacher beginning the statement, "This (line) is . . . .," with the child.

   c. Child produces the entire statement himself.

   d. Continue with other polars being introduced.

   e. Child is given questions concerning the polar attrubutes which he answers with yes or no and a full statement.

   f. Child answers the question, "What can we say about this line?" with a statement.

C. Immediate Feedback

1. After the teacher makes a statement which is to be repeated or asks a question which is to be answered, he pauses to allow time for the child to produce the correct statement. The teacher then produces the correct statement so the child can check his response.

2. The mother can be utilized to check the child's behavior and reinforce his better responses.

D. Active Involvement--The child is continually repeating and producing oral statements.

E. Progression at Own Rate--Lesson is geared to the readiness of the children watching and to the work rate of the group norm.

III. Materials--Various pairs of objects which visually illustrate polar opposited (long stick and short stick, big box and a little box).

IV. Teaching Procedures

A. Teacher presents for viewing a pair of objects representative of opposite polar attributes (a long stick and a short stick).

B. Teacher states, while holding for view the appropriate object, "This stick is long." After changing object, "This stick is not long."

C. Teacher states, "Now you say it with me." She holds up the appropriate objects. "This stick is long. This stick is not long. Let's try it again." Repeat.

D. Teacher now says, "This time I will begin with you, and you finish." Holding the appropriate objects she says, "This stick is ________."

E. Feedback: "Did you say, 'This stick is long. This stick is not long?'"

F. Teacher states, "This time see if you can say all the words by yourself when I hold up the sticks." Teacher holds up first the long stick then the short stick, and pauses each time for the child to state the sentences.

G. Feedback: "Did you say, 'This stick is long. This stick is short?' Let us try it again." Repeat.

H. Teacher holds up one of the objects and states, "Is this stick long? Yes, this stick is long. Now I'll ask the question and you answer it with me. Is this stick long? Yes, this stick is long."

I. Feedback: "Did you say, 'Yes, this stick is long?'" Repeat for the NOT statement. ("No, this stick is not long.") Repeat whole sequence.

J. Teacher asks, "Now what can we say about this stick? We can say this stick is long. Now you answer the question with me. What can we say about this stick? This stick is long."

K. Feedback: "Did you say, 'This stick is long?'"

L. Repeat entire sequence for the other polar attributes.

V. Evaluation. Child should be able to phrase polar discriminations correctly.

A. Mothers can be utilized to check the child's ability to produce the desired behavior.

B. The home visitation or mobile teacher can check the child's verbal production individually or in small groups.

VI. Follow-up

A. In terms of the indivudual child

1. If child meets the evaluation criteria, he has completed his learning sequence.

2. If child does not meet the criteria

    a. His basal behavior should be reassessed.

    b. He should be given additional experiences with earlier objectives or with this objective.

B. In terms of the majority of children

1. If the majority of children meet the evaluation criteria, the television program has completed this particular teaching sequence.

2. If the majority of children cannot meet the criteria

    a. Their basal behaviors should be reassessed.

    b. The appropriateness of this skill being presented via television, rather than by home visitation or mobile unit, should be reassessed.

    c. If the presentation appears justified, additional TV experiences on this skill should be developed.

TELEVISION 2. COGNITION--IDENTIFYING PARTS OF HIS OWN BODY

I. Teaching Sequence. Behavioral Objectives

*A. When teacher points to part of body on a doll or picture, and names that part, touch same part of his own body.

B. Touch various parts of body on verbal command.

C. Name the parts of his own body while simultaneously touching them.

*This is the objective being taught in this lesson.

II. Principles of Instruction

A. Determining Basal Behavior. The majority of the children watching the program should be able to

1. Maintain attention for the majority of the program.

2. Follow oral directions.

3. Point to particular objects when they are named.

B. Successive Approximation

1. Diagnostic testing during the home visitation and mobile units indicates that the majority of children are ready for Objective A of this sequence.

2. The lesson

a. Child first touches large parts of his body (head).

b. Child then touches the smaller parts (nose).

C. Immediate Feedback

1. After TV teacher has given a direction and touched the appropriate part of a doll, he pauses to allow time for the child to respond.

2. He then changes the direction into a question ("Did you touch your head?"), and touches that part of the doll again.

3. He then encourages the child to do so if the child had not touched the appropriate part of his body. ("If you did not touch your head, do it now.") The mother could be used to check the child's responses in the home.

D. Active Involvement--The child is touching parts of his body in in response to directions.

E. Progression at Own Rate--Lesson is geared to the readiness of the majority of the children watching and to do the work rate of the group norm.

III. Materials--Either a very large, life-like doll or a life size picture of a child.

IV. Teaching Procedure

A. The teacher states the name of a part of the body and at the same time touches that part on a doll and then on himself.

B. The teacher directs the children.

1. "If I touch a part on the doll and name it, can you touch the same part on you?"

2. Teacher states, "Touch your head," while the teacher touches the doll's head again.

C. Progress through other parts of the body.

V. Evaluation--Child should be able to touch the appropriate parts of his body after the parts have been named and pointed to on a model.

VI. Follow-up

A. In terms of the individual child

1. If child meets evaluation criteria, he is ready to proceed to Objective B.

2. If the child does not meet the criteria

a. His basal behavior should be reassessed.

b. He needs work on a one-to-one or small group basis, where the mother or teacher touches a part of his own body and names it, the child then touches that same part on his own body.

B. In terms of the majority of children

1. If the majority of the children meet the evaluation criteria, the television program is justified in proceeding to Objective B.

2. If the majority of children watching the program cannot afterwards meet the evaluation criteria
    a. Their basal behaviors should be reassessed.
    b. The appropriateness of this skill being presented via television rather than by home visitation or mobile unit should be reassessed.
    c. If the presentation appears justified, additional television experiences on this skill should be developed.

TELEVISION 3. MOTOR ACTIVITY -- HAND COORDINATION

I. Teaching Sequence. Behavioral Objectives.

A. Use two hands to hold and move an object (a glass).

B. Alternate use of hands in simple tasks (in holding a glass).

C. Use both hands in a coordinated effort to accomplish a task. (Building a sand castle requires that both hands do different things but still work together.)

D. Use one hand to hold an object in place while the other works (hammering, drawing).

E. Given an outline drawing, color inside the lines.

F. Cut out a given figure with scissors. Reasonable accuracy of cutting is expected.

1. Cut along fold produced by folding a piece of paper.

2. Cut off the corner of a square piece of paper.

3. Given a square piece of paper folded along the diagonal to produce a triangle, cut a square from the center of the fold.

*G. Given cutouts, paste them on an outline with the same configuration.

*This is the objective being taught in this lesson.

II. Principles of Instruction

A. Determine Basal Behavior. The majority of children watching the program must be able to

1. Alternate the use of hands in simple tasks.

2. Use both hands in a coordinated effort to accomplish a task.

3. Use one hand to hold an object in place while another works.

4. Match identical forms.

5. Color within the lines of a form.

6. Maintain attention for the majority of the program.

7. Follow oral directions.

B. Successive Approximation

1. Diagnostic testing during the home visitation and mobile units indicates that the majority of children are ready for Objective G of this sequence.

2. The lesson

   a. Child selects a cutout of a particular shape.

   b. Child selects the outline which matches the shape.

   c. Child places the cutout on the outline so that they match.

C. Immediate Feedback

1. After the direction to select a particular cutout, teacher pauses to allow time for the child to select the correct cutout. He then comments on the cutout, giving the child the opportunity of checking his choice.

2. The TV teacher may say, "If your mother is there, have her check to see that you have the right cutout."

3. This same procedure follows selecting the appropriate outline and placing the cutout on the outline.

D. Active Involovement--The child is selecting, matching and aligning the cutout to the outline.

E. Progression at Own Rate--Lesson is geared to the readiness of the majority of the children watching and to the work rate of the group norm.

III. Materials

A. Each child shall have a home kit set up containing

1. Two or three simply shaped cutouts that will test alignment skill.

2. Outlines of the cutouts to which the mother has already applied paste.

B. One cutout and one outline somewhat more irregular might be used to eliminate the confusion of what outline and cutout to select.

C. Simpler outlines and cutouts could be done on two or three different programs.

D. The television teacher requires enlarged replicas of the same materials that the child has.

IV. Teaching Procedure

- A. Teacher asks early in the program, "Has your mother done the pasting for you that the visitor teacher asked?"
- B. The teacher shows a cutout and says, "Find your cutout that looks just like this."
- C. Feedback: "Does the cutout you picked look round like a ball?"
- D. The teacher shows the outline for the cutout and says, "Find the shape on your paper that looks just like your cutout."
- E. Feedback: "Does the shape you picked on the paper look round like a ball?"
- F. Teacher says, "Put the cutout on the shape on the paper so that it fits exactly."
- G. Feedback: "Can you see the lines on the paper? If you can, try to move the cutout so you can't."
- H. Continue with other shapes.
- I. Child can be instructed to do this over again with the mother if the mother hasn't provided the paste.

V. Evaluation--Child should be able to select matching forms and align one on top of the other.

VI. Follow-up

- A. In terms of the indivudual child
  - 1. If child meets the evaluation criteria, he has completed this learning sequence.
  - 2. If the child does not meet the criteria
    - a. His basal behavior should be reassessed.
    - b. He should be given additional experiences with earlier objectives or with this objective.
- B. In terms of the majority of children
  - 1. If the majority of children meet the evaluation criteria, the television program has completed this particular teaching sequence.

2. If the majority of children cannot meet the criteria
   a. Their basal behaviors should be reassessed.
   b. The appropriateness of this skill being presented via television rather than by home visitation or mobile unit should be reassessed.
   c. If the presentation appears justified, additional TV experiences on this skill should be developed.

Appendix 1

Parent Interview-Questionnaire

Interviewer ______________________ Time ____________

Family name ______________________ N C O Date ____________

______________________ Location ____________

____

1. Community Size:
    1 farm
    2 village (50-2500)
    3 small town (under 2500)
    4 town of 2500-25,000
    5 city of 25,000-500,000
    6 city of over 500,000

2. Person Interviewed:

Mother ☐

Father ☐

Mother/Father ☐

Stepmother ☐

Grandmother ☐

Other ☐

3. Are you at present
    1 married?
    2 widowed?
    3 separated?
    4 divorced?

	Age	Birth Date	Place of Birth	Last Grade Completed	Where Majority of school completed	Occupation (if in school give grade)	Other training
4. Mother							
Father							

I would now like to ask you about the other members of your family.

5. Children in Home	Name (specify if not sibling)		Birth Date	Age	Place of Birth	Last Grade Completed	Occupation (If in school give grade)
		M F					
		M F					
		M F					
		M F					
		M F					
		M F					
		M F					

TOTAL ______________

6. Other Adults	Name (specify relationship to child)		Birth Date	Age	Place of Birth	Last Grade Completed	Occupation (If in school give grade)
	________	M F	____	___	______	______	______
	________	M F	____	___	______	______	______
	________	M F	____	___	______	______	______
	________	M F	____	___	______	______	______
TOTAL	________						

7. If, in addition, ________________ has attended any other school, circle the number of years attended:

1 Business College ½ 1 1½ 2
2 Teachers College ½ 1 1½ 2 2½ 3 3½ 4
3 Trade Schools ½ 1 1½ 2
4 Nurses' Training ½ 1 1½ 2 2½ 3
5 Other ________________________________ ½ 1 1½ 2

8. Mother's occupation:
1 housewife
2 works part-time
3 works full-time

9. Father's occupation:
1 steady
2 seasonal
3 unemployed
4 retired
5 welfare

10. Income:
1 under 1000
2 1000-1999
3 2000-3999
4 4000-5999
5 6000-8999
6 9000-above

11. Which of these types of communities listed below describes best the kind of place where you grew up?
1 a farm
2 a village 50-1000
3 a small town 1000-2500
4 a town of 2500 to 10,000
5 a city of 10,000-25,000
6 a city of 25,000-100,000
7 a city of over 100,000

12. How many times have you and your family moved in the past five years?________
(number of moves)

13. 1 ___ house (owned)
2 ___ house (rented)
3 ___ conventional apartment
4 ___ private converted apartment
5 ___ shared or semi-private rooms or apartment
6 ___ other (describe) ____________________

14. Number or rooms ______

15. (Ratio of rooms to people _______)

16. What rooms do you have?

0	1	
NO	YES	Separate kitchen
NO	YES	Bath for use of your family alone
NO	YES	Outhouse
NO	YES	It is full bath, with running water, toilet, tub or shower
NO	YES	Separate living room
NO	YES	Separate dining room
NO	YES	Porch
NO	YES	Basement room

Write in the actual number of bedrooms you have.__________

17. Do you have a car?
   1 I have no car available for use.
   2 I have a car available for use, but I don't drive.
   3 I have a car available for use which I drive myself.

18. Which of the following do you have in your home at present?

	YES	NO
newspapers	___	___
magazines	___	___
dictionary	___	___
encyclopedia	___	___
library books	___	___
television	___	___

19. In the past year which of the following items has ______________ received for his/her birthday or Christmas?

	YES	NO
dolls	___	___
candy	___	___
coloring books	___	___
puzzles	___	___
picture books	___	___
model cars, trucks	___	___
blackboard, chalk	___	___
toy stove	___	___
tricycle	___	___

other: __________________________
____

20. Which of the above items does ______________ play with most often? __________
Are any of these things available for ____________ to use at home at present?

	YES	NO
paste	___	___
paper	___	___
paints	___	___
coloring books	___	___
paper cut-outs	___	___
books	___	___
ruler	___	___
crayons	___	___
playdough	___	___
scissors	___	___
pencils	___	___

other: __________________________

____

Which one does __________________ use most often? _________________________

21. How many times in the past year has your child gone to a: (Please check appropriate space.)

	1 Never	2 Seldom	3 Several times	4 Very often
Library	___	___	___	___
Small grocery store, butcher shop, or produce stand	___	___	___	___
Supermarket	___	___	___	___
Post office	___	___	___	___
Playground	___	___	___	___
Zoo	___	___	___	___
Museum, art gallery, or exhibition	___	___	___	___
Airport	___	___	___	___
Railroad station	___	___	___	___
Fire station	___	___	___	___
Bank	___	___	___	___
Department store	___	___	___	___
Athletic event	___	___	___	___
Eaten in a restaurant	___	___	___	___
Parade	___	___	___	___
Circus or fair	___	___	___	___
Park	___	___	___	___
Beach, lake, or pool	___	___	___	___
Car rides	___	___	___	___
Gas station	___	___	___	___

22. Does your child have, or has he had, any pets such as:

	YES	NO
Dog	___	___
Cat	___	___
Bird	___	___
Pet fish	___	___
Turtle	___	___
Hamster	___	___

Other: ____________________

____

23. On the average, how many hours a day does your child watch television?

_____ never
_____ a few hours or less a week
_____ one hour per day
_____ two to three hours a day
_____ four to five hours a day
_____ six to seven hours a day
_____ eight or more hours a day
_____ no television

24. Does ________________ do the following things with the rest of the family?

	Check if yes
Eat meals together with the family	____________
Do things together in the evening	____________
Do things together on weekends	____________

25. Some children this age like to look at books. Does ________________ like to look at books or have someone show them to him? (Circle appropriate answer.)

1 extreme (much of each day)
2 regularly (at least once every day)
3 often (several times a week)
4 sometimes (at least once a week)
5 seldom
6 never

Does anyone in the family read to ____________? If yes, who?_____ 1 mother
2 father
3 sibling
4 other

26. Have you or are you teaching ______________ to do any of the following things? (Circle appropriate answers.)

1 to write his/her name
2 to count
3 to read
4 meanings of words
5 names of colors
6 his/her address and/or telephone number

27. If you could have your wish, and ________________ had the opportunity, how far in school would you like for (the child) to go? (Check the highest answer that applies.)

1 ___ finish grade school
2 ___ attend junior high school
3 ___ finish high school
4 ___ take vocational work in high school
5 ___ take vocational work after high school
6 ___ go to college
7 ___ finish college
8 ___ go to graduate school
9 ___ don't know

28. When _______________ starts to school, what grade do you expect him/her to receive in most subjects?

(Circle one? A A- B+ B B- C+ C C- D+ F)

29. If R had children in elementary school, ask (following questions):

When your children were in elementary school, about how often did you talk with their teacher?
0 not at all
1 once or twice a year
2 three or four times a year
3 regularly

Have you attended a PTA meeting in the last year?
0 not at all
1 once or twice
2 almost every one

30. Now we are going to go through some statements which describe some of the possible ways mothers deal with their children. First we would like you to listen to each statement which you consider the way you deal with ___________ and tell us whether this happens never, hardly ever, sometimes, fairly often, or very often.
1 never
2 hardly ever
3 sometimes
4 fairly often
5 very often

a. _____ I make him feel I am there if he needs me.

b. _____ I keep pushing him to do his best in whatever he does.

c. _____ I slap him.

d. _____ I keep after him to do better than other children.

e. _____ When he does something I don't like, he knows exactly what to expect of me.

f. _____ I say nice things about him.

g. _____ I nag at him.

h. _____ I teach him things he wants to learn.

i. _____ I am very strict with him if he doesn't do what's expected of him.

j. _____ I expect him to keep his things in order.

31. Let's just imagine that ______________ is old enough to go to grade school for the first time. How do you think you would prepare him/her? What would you do or tell him/her?

32. What are some of the things that your child is able to do which make you think he will do well in school? (Minimum of three statements)

1. ____

2. ____

3. ____

4. ____

5. ____

33. We will present you with some everyday happenings involving a parent and a four-year-old child. We would like you to describe in detail how you would settle each situation even if it has never happened between you and your child.

Tell exactly how YOU would act and exactly what YOU would say. Remember the best answer is to tell your own way of handling the situation.

When I told X he is not supposed to jump on the furniture (in the living room), he began to scream and hit me, so I said:

____

____

____

____

34. X had been playing for quite a while. Then he came over and said: "Mommy, (Daddy) come play with me." I was busy at the time trying to get some things done. I told him I was busy and could not come right then. He left for a few minutes and then came back with the same request, so I said:

____

____

____

____

35. Through the window I noticed X was outdoors making something. Just as he was about to finish, a playmate of his about the same age as X accidentally damaged it. From what I could see, I was sure it was an accident. By the time I got outside, X was hitting and kicking at his playmate, who was crying. While there seemed to be no danger of either of them getting really hurt, I didn't think that X was doing the right thing in hitting his playmate, so I said:

____

____

____

____

36. As I read you each of the statements below, rate them as follows:

A	a	d	D
strongly agree	mildly agree	mildly disagree	strongly disagree

	Agree	Disagree
1. Children should be allowed to disagree with their parents if they feel their own ideas are better.	A a	d D
2. A good mother should shelter her child from life's little difficulties.	A a	d D
3. The home is the only thing that matters to a good mother.	A a	d D
4. Some children are just so bad they must be taught to fear adults for their own good.	A a	d D
5. Children should realize how much parents have to give up for them.	A a	d D
6. You must always keep tight hold of baby during his bath for in a careless moment he might slip.	A a	d D
7. A child will be grateful later on for strict training.	A a	d D
8. Children will get on any woman's nerves if she has to be with them all day.	A a	d D
9. It's best for the child if he never gets started wondering whether his mother's views are right.	A a	d D
10. More parents should teach their children to have unquestioning loyalty to them.	A a	d D
11. A child should be taught to avoid fighting no matter what happens.	A a	d D

	Agree		Disagree	
12. One of the worst things about taking care of a home is a woman feels that she can't get out.	A	a	d	D
13. Parents should adjust to the children some rather than always expecting the children to adjust to the parents.	A	a	d	D
14. There are so many things a child has to learn in life there is no excuse for him sitting around with time on his hands.	A	a	d	D
15. If you let children talk about their troubles, they end up complaining even more.	A	a	d	D
16. A young child should be protected from hearing about sex.	A	a	d	D
17. If a mother doesn't go ahead and make rules for the home, the children and husband will get into troubles they don't need to.	A	a	d	D
18. A mother should make it her business to know everything her children are thinking.	A	a	d	D
19. Children would be happier and better behaved if parents would show an interest in their affairs.	A	a	d	D
20. Most children are toilet trained by 15 months of age.	A	a	d	D
21. There is nothing worse for a young mother than being alone while through her first experience with a baby.	A	a	d	D
22. A child has a right to his own point of view and ought to be allowed to express it.	A	a	d	D
23. A child should be protected from jobs which might be too tiring or hard for him.	A	a	d	D
24. A woman has to choose between having a well run home and hobnobbing around with neighbors and friends.	A	a	d	D
25. A wise parent will teach a child early just who is boss.	A	a	d	D
26. Few women get the gratitude they deserve for all they have done for their children.	A	a	d	D
27. Mothers never stop blaming themselves if their babies are injured in accidents.	A	a	d	D
28. Children who are held to firm rules grow up to be the best adults.	A	a	d	D

		Agree		Disagree	
29.	It's a rare mother who can be sweet and even tempered with her children all day.	A	a	d	D
30.	Children should never learn things outside the home which make them doubt their parents' ideas.	A	a	d	D
31.	A child soon learns that there is no greater wisdom than that of his parents.	A	a	d	D
32.	There is no good excuse for a child hitting another child.	A	a	d	D
33.	Most young mothers are bothered more by the feeling of being shut up in the home than by anything else.	A	a	d	D
34.	Children are too often asked to do all the compromising and adjustment and that is not fair.	A	a	d	D
35.	Parents should teach their children that the way to get ahead is to keep busy and not waste time.	A	a	d	D
36.	Children pester you with all their little upsets if you aren't careful from the first.	A	a	d	D
37.	Children who take part in sex play become sex criminals when they grow up.	A	a	d	D
38.	A mother has to do the planning because she is the one who knows what's going on in the home.	A	a	d	D
39.	An alert parent should try to learn all her child's thoughts.	A	a	d	D
40.	Parents who are interested in hearing about their children's parties, dates, and fun help them grow up right.	A	a	d	D
41.	The earlier a child is weaned from its emotional ties to its parents, the better it will handle its own problems.	A	a	d	D
42.	A wise woman will do anything to avoid being by herself before and after a new baby.	A	a	d	D

37. This section contains questions referring to ways of life in groups of nine choices. Please listen to each group and indicate which way of life is your first, second, third, to the ninth choice. (Place the number 1 in front of your first choice and the number 2 in front of your second choice, and so forth through the ninth.)

As an individual, which of the following do you consider frist (1), second (2), third (3), to the ninth (9) in importance to you.

___ a. To live in the outdoors and the pure air of the mountains.
___ b. To have as much education as one can get.
___ c. To achieve things that others cannot.
___ d. To keep in close contact with God.
___ e. To have the friendship of many people.
___ f. To put in a solid day's work.
___ g. To have a lot of time to be with your family.
___ h. To have a comfortable living.
___ i. To have a lot of time for your favorite hobby or sport.

38. Has ____________ received service from a physician in the last year? _____

Has ____________ received service from a dentist in the last year? _______

Has ____________ been in a hospital over night in the last year? _______

Has ____________ been in a health department clinic in the last year? ____

Appendix 2

Interview-Questionnaire Summary Tables

GENERAL DEMOGRAPHIC DATA

TABLE 1

COMMUNITY SIZE

	UPSHUR		MONONGALIA	
	N	%	N	%
Farm	18	31.5	1	1.8
Village	25	43.9	24	44.5
Small Town	2	3.5	29	53.7
Town (2500-25,000)	11	19.3	--	----
City (25.000-500,000)	--	----	--	----
City (more than 500,000)	--	----	--	----
Total	56	98.2	54	100.0

*One respondent (1.8%) from Upshur did not reply.

TABLE 2

PERSON INTERVIEWED

	UPSHUR		MONONGALIA	
	N	%	N	%
Mother	52	91.2	51	94.4
Father	2	3.5	1	1.9
Mother/Father	2	3.5	0	0
Grandmother	1	1.8	2	3.7
Total	57	100.0	54	100.0

TABLE 3

MARITAL STATUS

	UPSHUR		MONONGALIA	
	N	%	N	%
Married	52	91.2	46	85.1
Widowed	1	1.8	0	0.0
Separated	0	0.0	2	3.7
Divorced	3	5.2	3	5.6
Single	1	1.8	2	3.7
Total	57	100.0	53	98.1*

*One respondent (1.9%) did not reply.

TABLE 4

RACE

	UPSHUR		MONONGALIA	
	N	%	N	%
Negro	0	0.0	15	27.8
Caucasian	57	100.0	39	72.2
Total	57	100.0	54	100.0

TABLE 5

AGE OF MOTHER

	UPSHUR		MONONGALIA	
	N	%	N	%
Under 21	1	1.8	2	3.6
21-25	12	21.1	19	35.2
26-30	19	33.3	13	24.1
31-35	11	19.3	5	9.3
36-40	10	17.5	6	11.1
41-45	1	1.8	6	11.1
Over 45	1	1.8	3	5.6
Total	55	96.6*	54	100.0

*Two respondents (3.4%) did not classify themselves.

TABLE 6

PLACE OF BIRTH OF MOTHER

	UPSHUR		MONONGALIA	
	N	%	N	%
Same Community	4	7.0	12	22.2
Same County	23	40.4	25	46.3
Rural Region Within State	13	22.8	10	18.5
Urban Region Within State	7	12.3	2	3.7
Rural Region Outside State	2	3.5	2	3.7
Urban Region Outside State	3	5.3	2	3.7
Total	52	91.3*	53	98.1**

*Five respondents (8.7%) from Upshur did not reply.
**One respondent (1.9%) from Monongalia did not reply.

TABLE 7

HIGHEST GRADE COMPLETED BY MOTHER

	UPSHUR		MONONGALIA	
	N	%	N	%
3-4	2	3.5	1	1.9
5-6	1	1.8	2	3.7
7-8	5	8.8	10	18.5
9-10	14	24.5	19	35.2
11-12	32	56.1	21	38.8
13-16	2	3.5	0	0.0
Total	56	98.2*	53	98.1**

*One respondent (1.8%) from Upshur did not reply.
**One respondent (1.9%) from Monongalia did not reply.

TABLE 8

WHERE MOTHER COMPLETED MAJORITY OF SCHOOL

	UPSHUR		MONONGALIA	
	N	%	N	%
Same Community	6	10.5	13	24.1
Same County	31	54.4	23	42.6
Rural Region Within State	6	10.5	5	9.3
Urban Region Within State	5	8.8	4	7.4
Rural Region Outside State	2	3.5	2	3.7
Urban Region Outside State	3	5.3	1	1.9
Total	53	93.0*	48	89.0**

*Four respondents (7.0%) from Upshur did not reply.
**Six respondents (11%) from Monongalia did not reply.

TABLE 9

OCCUPATION OF MOTHER

	UPSHUR		MONONGALIA	
	N	%	N	%
Housewife	49	85.9	44	81.4
Factory	2	3.5	2	3.7
Waitress, St. Clerk	1	1.8	2	3.7
Housekeeper	0	0.0	0	0.0
Sec., Clerk, Typist	2	3.5	1	1.9
Nurse, Teacher, Semi-Pro.	3	5.3	0	0.0
Professional	0	0.0	0	0.0
Other	0	0.0	5	9.3
Total	57	100.0	54	100.0

TABLE 10

AGE OF FATHER

	UPSHUR		MONONGALIA	
	N	%	N	%
21-25	5	8.8	7	13.0
26-30	16	28.1	15	27.8
31-35	12	21.1	9	16.7
36-40	4	7.0	6	11.0
41-45	9	15.8	5	9.3
46-50	4	7.0	2	3.7
51-60	3	5.2	3	5.6
Over 60	0	0	1	1.9
Total	53	93.0*	48	89.0**

*Three of the respondents (5.2%) did not reply. One of the respondents (1.8%) noted that the father was dead.

**Six respondents did not reply because the father was not living in the home.

TABLE 11

PLACE OF BIRTH OF FATHER

	UPSHUR		MONONGALIA	
	N	%	N	%
Same Community	2	3.5	5	9.3
Same County	30	52.6	17	31.5
Rural Region Within State	13	22.8	12	22.2
Urban Region Outside State	2	3.5	4	7.4
Rural Region Outside State	1	1.8	7	13.0
Urban Region Outside State	4	7.0	3	5.6
Total	52	91.2*	48	89.0**

*Five respondents (8.8%) from Upshur did not reply.
**Six respondents (11.0%) from Monongalia did not reply.

TABLE 12

HIGHEST GRADE COMPLETED BY FATHER

	UPSHUR		MONONGALIA	
	N	%	N	%
4 or less	2	3.5	1	1.9
5-6	2	3.5	2	3.7
7-8	18	31.6	8	14.8
9-10	4	7.0	7	13.0
11-12	22	38.6	27	50.0
13-16	5	8.8	3	5.6
Over 16	0	0	1	1.9
Total	53	93.0*	49	90.9**

*Four respondents (7.0%) from Upshur did not reply.
**Five respondents (9.1%) from Monongalia did not reply.

TABLE 13

WHERE FATHER COMPLETED MAJORITY OF SCHOOL

	UPSHUR		MONONGALIA	
	N	%	N	%
Same Community	4	7.0	8	14.8
Same County	31	54.4	23	42.6
Rural Region Within State	9	15.8	6	11.1
Urban Region Within State	3	5.3	3	5.6
Rural Region Outside State	1	1.8	3	5.6
Urban Region Outside State	3	5.3	2	3.7
Total	51	89.6*	45	83.4**

*Six respondents (10.4%) from Upshur did not reply.
**Nine respondents (16.6%) from Monongalia did not reply.

TABLE 14

OCCUPATION OF FATHER

	UPSHUR		MONONGALIA	
	N	%	N	%
Unemployed	5	8.8	2	3.7
Retired, disabled	4	7.0	1	1.9
Unskilled	7	12.3	6	11.1
Semiskilled	24	42.0	24	44.3
Skilled	5	8.8	5	9.3
White Collar	1	1.8	2	3.7
Semi-professional	0	0	0	0
Professional	0	0	1	1.9
Managerial, Proprietor	2	3.5	1	1.9
Other	9	15.8	12	22.2
Total	57	100.0	54	100.0

TABLE 15

FAMILY INCOME

	UPSHUR		MONONGALIA	
	N	%	N	%
Under 1000	3	5.3	10	18.5
1000-1999	2	3.5	19	35.2
2000-3999	20	35.1	21	38.8
4000-5999	12	21.1	1	1.9
6000-8999	14	24.5	2	3.7
9000-above	2	3.5	1	1.9
Total	53	93.0*	54	100.0

*Four of the respondents (7.0%) from Upshur did not reply.

TABLE 16

TYPE OF DWELLING

	UPSHUR		MONONGALIA	
	N	%	N	%
House (owned)	32	56.1	34	63.0
House (rented)	17	29.8	14	25.8
Conventional apartment	3	5.3	1	1.9
Shared or semi-private rooms or apt.	1	1.8	0	0
Other	4	7.0	5	9.3
Total	57	100.0	54	100.0

TABLE 17

TOTAL NUMBER OF ADULTS OTHER THAN PARENTS IN HOME

	UPSHUR		MONONGALIA	
	N	%	N	%
None	50	87.7	39	72.2
One	4	7.0	8	14.8
Two	2	3.5	6	11.1
Three	1	1.8	1	1.9
Total	57	100.0	54	100.0

TABLE 18

TOTAL NUMBER OF PERSONS IN HOME

	UPSHUR		MONONGALIA	
	N	%	N	%
3-4	14	24.5	14	25.9
5-6	21	36.9	20	37.0
7-8	15	26.3	15	27.7
9-10	3	5.2	5	9.2
11-12	2	3.5	0	0
13-14	1	1.8	0	0
Over 14	0	0	0	0
Total	56	98.2*	54	100.0

*One respondent (1.8%) from Upshur did not reply.

TABLE 19

RATIO OF ROOMS TO PEOPLE

	UPSHUR		MONONGALIA	
	N	%	N	%
2/1	5	8.8	4	7.4
1.5/1	5	8.8	4	7.4
1/1	28	49.0	25	46.2
1/1.5	13	22.8	11	20.4
1/2	4	7.0	8	14.8
1/2.5	1	1.8	1	1.9
1/3	1	1.8	1	1.9
Total	57	100.0	54	100.0

TABLE 20

TOTAL NUMBER CHILDREN IN HOME FALLING IN 3-6 AGE RANGE

	UPSHUR		MONONGALIA	
	N	%	N	%
One	29	50.8	28	51.9
Two	18	31.6	18	33.3
Three	9	15.8	8	14.8
Four	1	1.8	0	0.0
More than four	0	0.0	0	0.0
Total	57	100.0	54	100.0

TABLE 21

TOTAL NUMBER CHILDREN IN HOME IN OTHER THAN 3-6 AGE RANGE

	UPSHUR		MONONGALIA	
	N	%	N	%
0	6	10.5	14	25.9
1	23	40.4	15	27.7
2	8	14.0	9	16.6
3	9	15.8	7	13.0
4	5	8.8	3	5.6
More than 4	6	10.5	3	5.6
Total	57	100.0	51	94.4*

*Three respondents (5.6%) from Monongalia did not reply.

TABLE 22

TOTAL NUMBER CHILDREN IN HOME

	UPSHUR		MONONGALIA	
	N	%	N	%
1	3	5.3	5	9.3
2	10	17.5	16	29.5
3	15	26.3	14	25.9
4	8	14.0	4	7.4
5	9	15.8	3	5.6
6	6	10.5	8	14.8
7	2	3.5	3	5.6
8	1	1.8	0	0.0
More than 8	2	3.5	1	1.9
Total	56	98.2*	54	100.0

*One respondent (1.8%) from Upshur did not reply.

TABLE 23

GRADE AVERAGE PARENT EXPECTS CHILD TO RECEIVE IN SCHOOL

	UPSHUR		MONONGALIA	
	N	%	N	%
A	5	8.8	8	14.8
A-	3	5.1	3	5.6
B+	7	12.1	7	13.0
B	25	44.2	21	38.9
B-	4	7.0	7	13.0
C+	4	7.0	1	1.9
C	8	14.0	5	9.3
C-	0	0.0	0	0.0
D+	0	0.0	0	0.0
F	0	0.0	0	0.0
Don't know	1	1.8	2	3.5
Total	57	100.0	54	100.0

TABLE 24

HOW FAR PARENT WANTS CHILD TO GO IN SCHOOL

	UPSHUR		MONONGALIA	
	N	%	N	%
Finish grade school	0	0.0	0	0.0
Attend junior high	0	0.0	0	0.0
Finish high school	6	10.6	7	13.0
Take vocational work in high school	0	0.0	0	0.0
Take vocational work after high school	2	3.5	0	0.0
Go to college	5	8.8	6	11.1
Finish college	40	70.1	33	61.1
Go to graduate school	5	7.0	6	11.1
Don't know	0	0.0	2	3.7
Total	57	100.0	54	100.0

TABLE 25

COMPARATIVE RANKINGS* OF NINE BELIEF-ATTITUDE STATEMENTS FOR THE TWO COUNTY SUBSAMPLES

ITEMS	UPSHUR	MONONGALIA
To live in outdoors and pure air of mountains	7	7
To have as much education	2	2
To achieve things that others cannot	8	8
To keep in close contact with God	1	1
To have the friendship of many people	4	5
To put in a solid day's work	6	6
To have a lot of time to spend with family	3	3
To have a comfortable living	5	4
To spend a lot of time with your favorite hobby or sport	9	9

*Respondents ranked each of the nine attitude statements in order of decreasing importance to them, e.g., thus close contact with God was ranked as most important and time spent on hobbies or sport as least important by the majority of the respondents. Table values are derived from the total number of respondents who ranked the respective statement as 1st, 2nd, or 3rd in their listings.

TABLE 26

HEALTH SERVICES CHILD HAS RECEIVED IN PAST YEAR

	Upshur						Monongalia					
	Yes		No		Total		Yes		No		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Physician	40	70.2	17	29.8	57	100.0	37	68.5	16	29.6	53	98.1**
Dentist	22	38.6	35	61.4	57	100.0	13	24.1	41	75.9	54	100.0
Overnight Hospitalization	2	3.5	53	93.0	55	96.5*	2	3.7	51	94.4	53	98.1**
Health Department Clinic	16	28.1	41	71.9	57	100.0	30	55.6	24	44.4	54	100.0

*Two respondents (3.5%) did not reply.
**One respondent (1.9%) did not reply.

ENVIRONMENTAL BACKGROUND AND CONDITIONS OF THE CHILDREN

TABLE 27

PLACE OF BIRTH

	UPSHUR		MONONGALIA	
	N	%	N	%
Same Community	8	14.0	1	1.9
Same County	35	61.4	43	79.5
Rural Region Within State	2	3.5	3	5.6
Urban Region Within State	4	7.0	4	7.4
Rural Region Outside State	4	7.0	0	0.0
Urban Region Outside State	3	5.3	3	5.6
Total	56	98.2*	54	100.0

*One respondent (1.8%) from Upshur did not reply.

TABLE 28

TIME SPENT LOOKING AT BOOKS BY CHILD

	UPSHUR		MONONGALIA	
	N	%	N	%
Extreme	12	15.0	12	15.0
Regularly	27	33.7	35	43.8
Often	32	40.0	18	22.4
Sometimes	6	7.5	9	11.3
Seldom	2	2.5	6	7.5
Never	1	1.3	0	0.0
Total	80	100.0	80	100.0

TABLE 29

CHILD IS READ TO BY OTHERS

	UPSHUR						MONONGALIA					
	YES		NO		TOTAL		YES		NO		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
First Child	48	84.2	9	15.8	57	100.0	45	83.3	9	16.7	54	100.0
Second Child	25	43.9	32	56.1	57	100.0	21	38.9	33	61.1	54	100.0
Third Child	9	15.8	48	84.2	57	100.0	5	9.3	49	90.7	54	100.0

TABLE 30

ITEMS IN HOME

	UPSHUR						MONONGALIA					
	YES		NO		TOTAL		YES		NO		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Newspapers	49	85.9	8	14.1	57	100.0	44	82.5	10	17.5	54	100.0
Magazines	46	80.7	11	19.3	57	100.0	42	77.8	12	22.2	54	100.0
Dictionary	46	80.7	11	19.3	57	100.0	40	74.1	14	25.9	54	100.0
Encyclopedia	34	59.6	23	40.4	57	100.0	20	35.1	34	64.9	54	100.0
Ligrary Books	34	59.6	23	40.4	57	100.0	26	48.1	28	51.9	54	100.0
Television	54	94.7	3	5.3	57	100.0	51	94.4	3	5.6	54	100.0

TABLE 31

ITEMS AVAILABLE IN HOME FOR CHILD

	UPSHUR						MONONGALIA					
	YES		NO		TOTAL		YES		NO		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Paste	27	47.5	30	52.5	57	100.0	14	26.0	40	74.0	54	100.0
Paper	51	89.4	6	10.6	57	100.0	53	98.1	1	1.9	54	100.0
Paints	25	43.9	32	56.1	57	100.0	19	35.1	35	64.9	54	100.0
Coloring Books	46	80.6	11	19.4	57	100.0	48	88.9	6	11.1	54	100.0
Cut-outs	27	47.4	30	52.6	57	100.0	23	42.6	31	57.4	54	100.0
Books	50	87.6	7	12.4	57	100.0	49	90.7	5	9.3	54	100.0
Ruler	32	56.1	25	43.9	57	100.0	21	38.9	33	61.1	54	100.0
Crayons	45	78.9	12	21.1	57	100.0	48	88.9	6	11.1	54	100.0
Playdough	25	43.9	32	56.1	57	100.0	32	59.3	22	40.7	54	100.0
Scissors	47	82.5	10	17.5	57	100.0	32	59.3	22	40.7	54	100.0
Pencils	52	91.2	5	8.8	57	100.0	52	96.3	2	3.7	54	100.0

TABLE 32

HOURS PER DAY WHICH CHILD WATCHES TELEVISION

	UPSHUR		MONONGALIA	
	N	%	N	%
Never	3	5.2	3	5.4
Few	2	3.5	7	13.0
One	3	5.3	5	9.3
Two-three	23	40.4	30	55.6
Four-five	20	35.1	7	13.0
Six-seven	2	3.5	2	3.7
Eight or more	4	7.0	0	0.0
Total	57	100.0	54	100.0

TABLE 33

PLACES CHILD HAS BEEN

	NEVER				SELDOM					SEVERAL TIMES				VERY OFTEN				
	Upshur		Monong.		Upshur		Monong.			Upshur		Monong.		Upshur		Monong.		
	N	%	N	%	N	%	N	%	S. Tot.	N	%	N	%	N	%	N	%	S. Tot.
Library	44 R 2	77.2 3.5	41	75.9	5	8.8	6	11.1	U 86.0 M 87.0	1	1.8	4	7.4	5	8.8	3	5.6	U 10.6 M 13.0
Sm. Grocery Store & Butcher Shop	3	5.3	1	1.9	7	12.3	3	5.6	U 17.6 M 7.5	17	29.8	17	31.5	30	52.6	33	61.1	U 82.4 M 92.6
Supermarket	5	8.8	6	11.1	8	14.0	8	14.8	U 22.8 M 25.9	19	33.3	16	29.6	25	43.9	24	44.4	U 77.2 M 74.0
Post Office	21	36.8	9	16.7	12	21.1	8	14.8	U 57.9 M 31.5	13	22.8	12	22.2	11	19.3	25	46.3	U 42.1 M 68.5
Playground	25 R 1	43.9 1.8	15	27.8	15	26.3	12	22.2	U 70.2 M 50.0	6	10.5	15	27.8	10	17.5	12	22.2	U 28.0 M 50.0
Zoo	32	56.1	38 R 2	70.4 3.7	11	19.3	13	24.1	U 75.4 M 94.5	13	22.8	1	1.9	1	1.8	0	0.0	U 24.6 M 1.9
Museum and Art Gallery	43 R 1	75.4 1.8	47	87.0	13	22.8	4	7.4	U 98.2 M 94.4	0	0.0	2	3.7	0	0.0	0	0.0	U 0.0 M 3.7
Airport	35 R 1	61.4 1.8	22	40.7	17	29.8	21	38.9	U 91.2 M 79.6	3	5.3	9	16.7	1	1.8	2	3.7	U 7.1 M 20.4
RR Station	40 R 1	70.2 1.8	50	92.6	14	24.6	4	7.4	U 94.8 M100.0	1	1.8	0	0.0	1	1.8	0	0.0	U 3.6 M 0.0

TABLE 33 (Continued)

	NEVER				SELDOM					SEVERAL TIMES				VERY OFTEN				
	Upshur		Monong.		Upshur		Monong.			Upshur		Monong.		Upshur		Monong.		
	N	%	N	%	N	%	N	%	S. Tot.	N	%	N	%	N	%	N	%	S. Tot.
Fire Station	36 R 1	63.2 1.8	37	68.5	14	24.6	12	22.2	U 87.8 M 90.7	3	5.3	5	9.3	3	5.3	0	0.0	U 10.6 M 9.3
Bank	8	14.0	20	37.0	14	34.6	13	24.1	U 38.6 M 61.1	20	35.1	17	31.5	15	26.3	4	7.4	U 61.4 M 38.9
Department Store	12	21.1	9	16.7	5	8.8	11	20.4	U 29.9 M 37.1	25	43.9	23	42.6	15	26.3	11	29.4	U 70.2 M 63.0
Athletic Event	32 R 2	56.1 3.5	38	70.0	12	21.1	7	13.0	U 77.2 M 83.0	8	14.0	7	13.0	3	5.3	2	3.7	U 19.3 M 16.7
Eaten in Restaurant	12	21.1	10	18.5	17	29.8	14	25.9	U 50.9 M 44.4	20	35.1	23	42.6	8	14.0	7	23.0	U 49.1 M 65.6
Parade	15	26.3	24	44.4	20	35.1	19	35.2	U 61.4 M 79.6	20	35.1	10	18.5	1	1.8	1	1.9	U 36.9 M 20.4
Circus, Fair	21 R 1	36.8 1.8	12	22.0	23	40.4	30	55.6	U 77.2 M 77.6	12	21.1	10	18.5	0	0.0	2	3.7	U 21.1 M 20.5
Park	25 R 1	43.9 1.8	13	24.1	11	19.3	13	24.1	U 63.2 M 48.2	14	24.6	22	40.7	6	10.5	6	11.1	U 35.1 M 51.8
Beach, Lake, Pool	27 R 2	47.4 3.7	16	29.6	10	17.5	12	22.2	U 64.9 M 51.8	14	24.6	18	33.3	6	10.5	6	11.1	U 35.1 M 44.4
Car Rides	2 R 1	3.5 1.8	2	3.7	1	1.8	5	9.3	U 5.3 M 13.0	12	21.1	9	16.7	41	71.9	38	70.4	U 93.0 M 87.1
Gas Station	5 R 1	8.8 1.8	4	7.4	3	5.3	7	13.0	U 14.0 M 20.4	19	33.3	10	18.5	29	50.9	33	61.1	U 84.2 M 79.6

TABLE 34

PETS WHICH CHILD HAS OR HAS HAD

	UPSHUR						MONONGALIA					
	YES		NO		TOTAL		YES		NO		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Dog	43	75.4	14	24.6	57	100.0	44	81.5	10	18.5	54	100.0
Cat	53	57.9	24	42.1	57	100.0	30	55.6	24	44.4	54	100.0
Bird	10	17.5	47	82.5	57	100.0	8	14.8	46	85.2	54	100.0
Pet Fish	8	14.0	49	86.0	57	100.0	15	27.8	39	72.2	54	100.0
Turtle	4	7.0	53	93.0	57	100.0	8	14.8	46	85.2	54	100.0
Hamster	0	0.0	57	100.0	57	100.0	4	7.4	50	92.6	54	100.0
Other	12	22.8	44	78.2	57	100.0	4	7.4	50	92.6	54	100.0

Appendix 3

Bibliographies

A. Intervention Research with Disadvantaged Children

B. Proposals and Programs for Preschool Enrichment

C. General Issues in Training Disadvantaged Children

D. Bibliographic Sources and Government Directives

E. Piagetian Training and Enrichment Studies Bibliography

F. Developmental Studies of Learning Processes.

1. Verbal Learning
2. Concept Formation
3. Probability Learning
4. Problem Solving and Problem Solving Strategies
5. Incidental Learning
6. Learning Set
7. Transposition and Related Phenomena
8. Incentive, Delary of Reward, and Reinforcement
9. Reversal-Shift and Discrimination Reversal
10. Stimulus and Response Factors

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